

727

**Field Test in Santa Cruz
Volume 2
Figures**

Oslo Salomonson

SSAB

A-7/5.7-

FIELD TEST OF THE LINS METHOD FOR THE RECOVERY OF OIL FROM TAR SAND

Volume 2

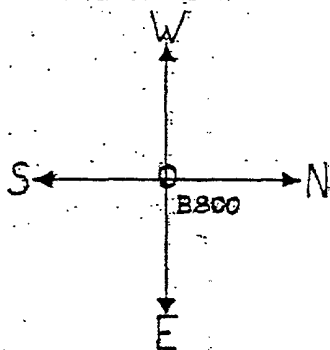
Figures

SANTA CRUZ, CALIFORNIA

Figure 1

L0-213
DEC. 20. 1957. 8P

TAR CONTENTS.



HOLE POSITION IN FT FROM B800 IN L8.
SCALE: 1" = 50.

TAR CONTENTS IN % BY WEIGHT OF DRY
TARSAND FROM 10-15 FT, 15-40 FT AND
40-45 FT, WRITTEN ABOVE THE HOLE
POSITION.

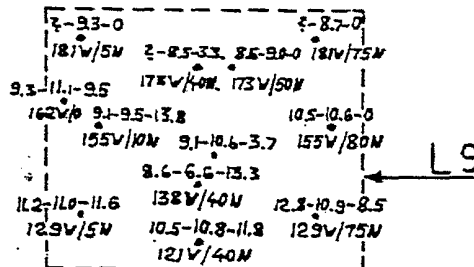
2.4-5.0-7.4
300W/200N

12.1-6.4-7.2
262W/0

9.6-7.4-12.3
190W/50S

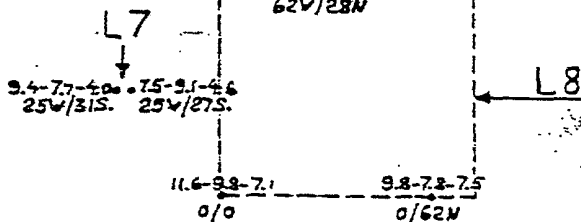
5.0-8.5-2
200W/200N

11.3-10.1-12.5
130W/55S



7.4-9.9-0
100W/200N

L6
12.6-8.3-6.6
14W/95S

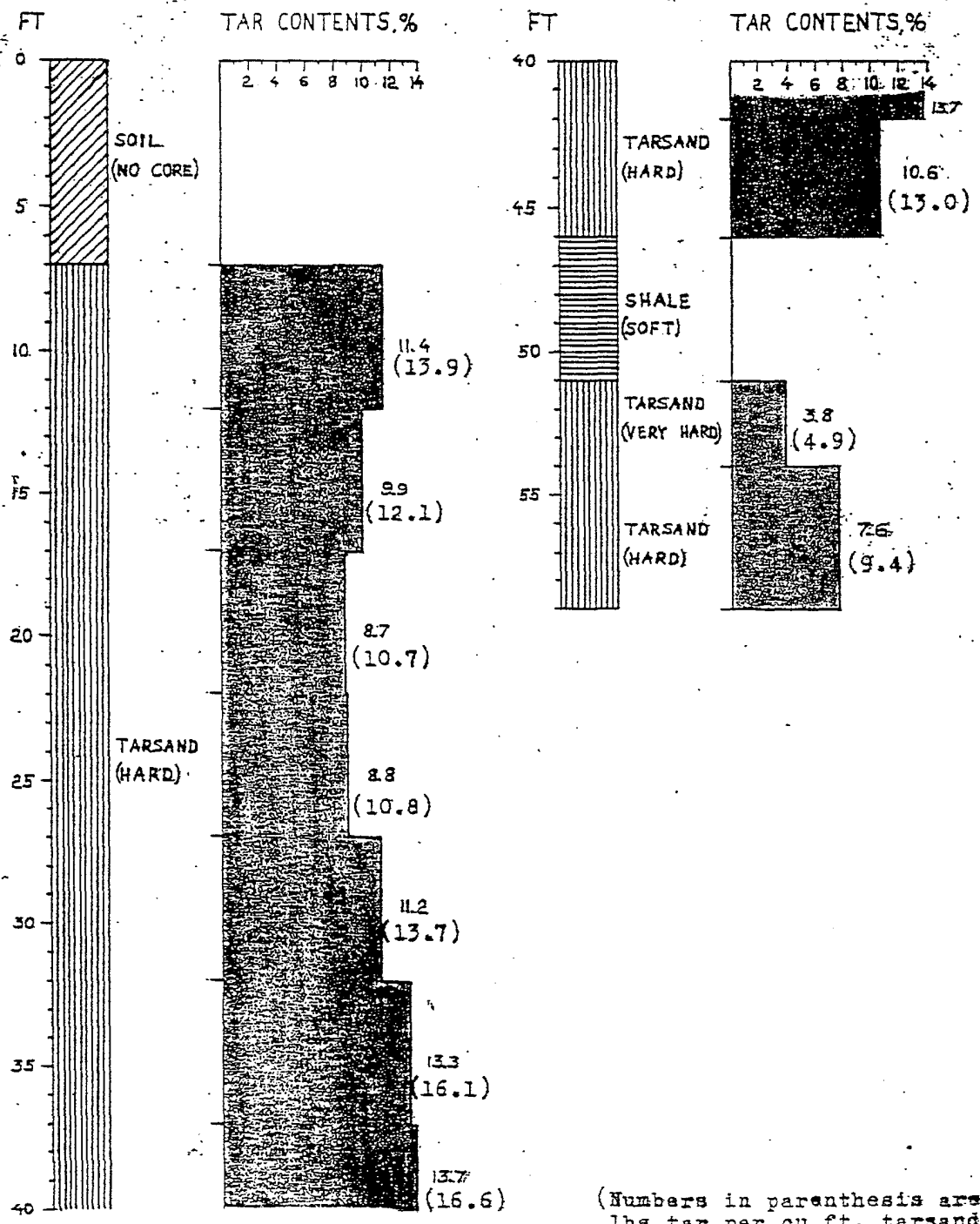


2-7.6-2.6
0/200N

L9-200
AUG. 30. 1957. 88

Figure 2

WELL LOG 121 W/40 N. (B2-5)

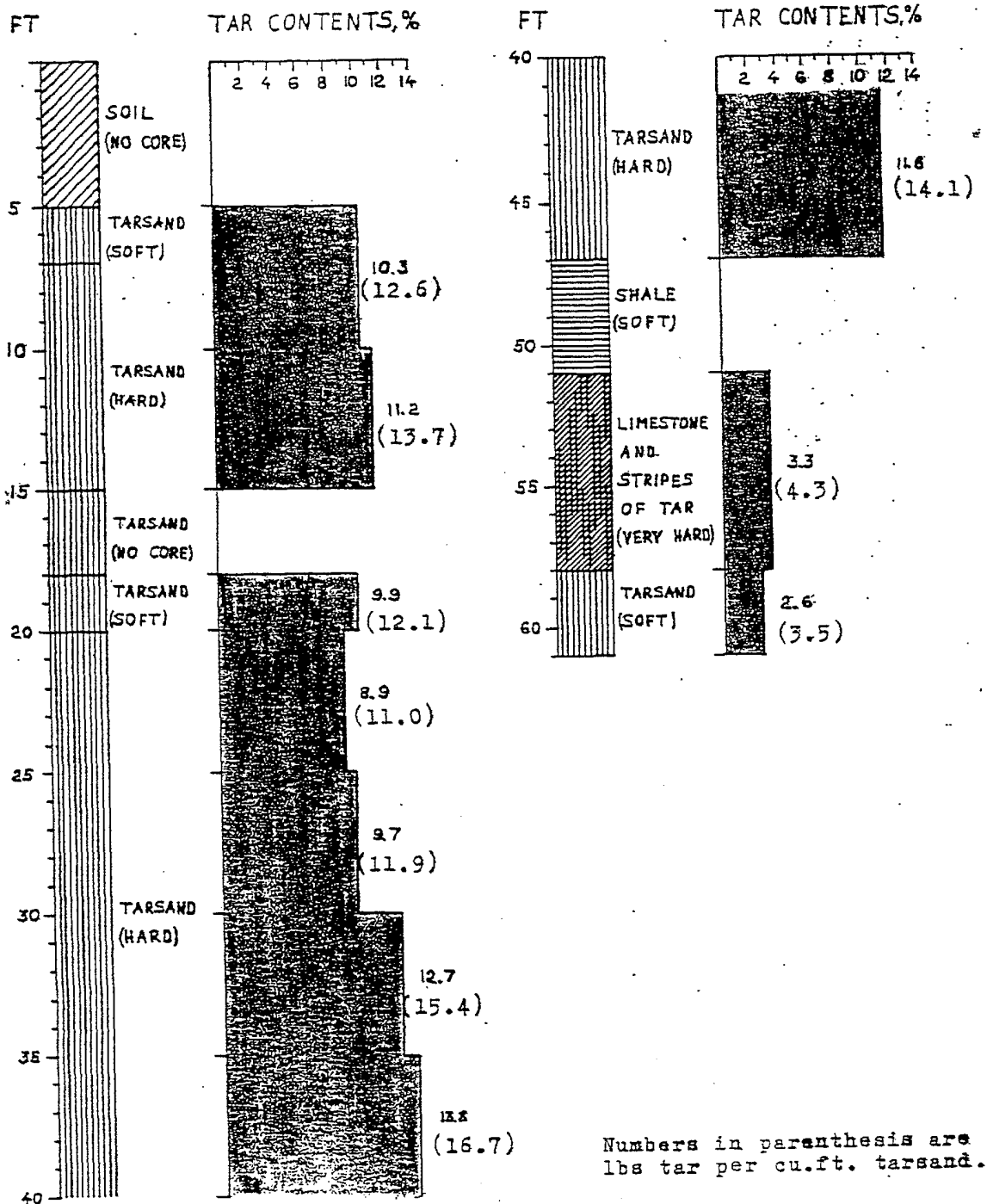


(Numbers in parenthesis are lbs tar per cu.ft. tarsand.)

L9-201
AUG. 30. 1957. 88

Figure 3

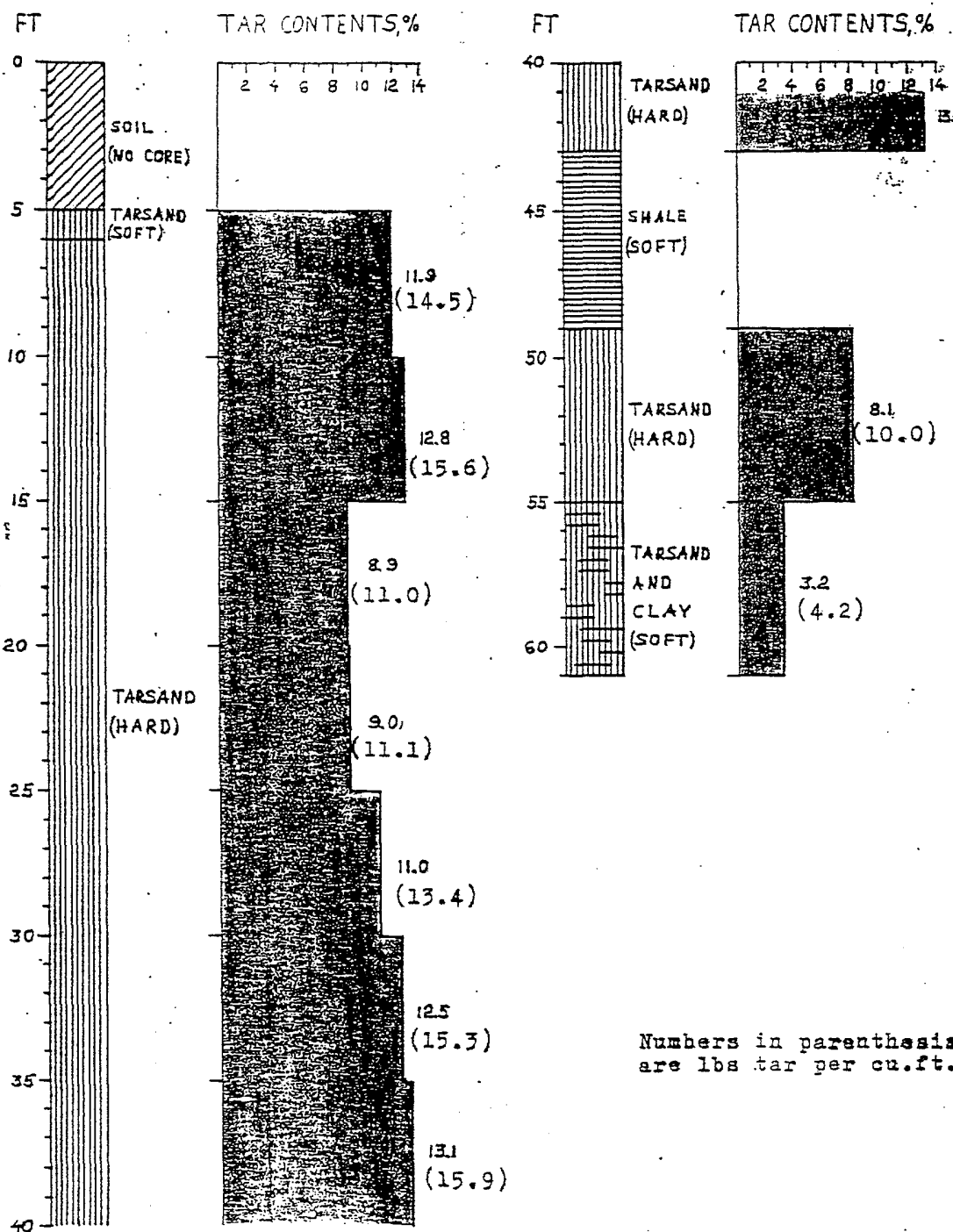
WELL LOG
129 W/5 N. (B3-2)



L9-202.
AUG. 30. 1957. 89.

Figure 4

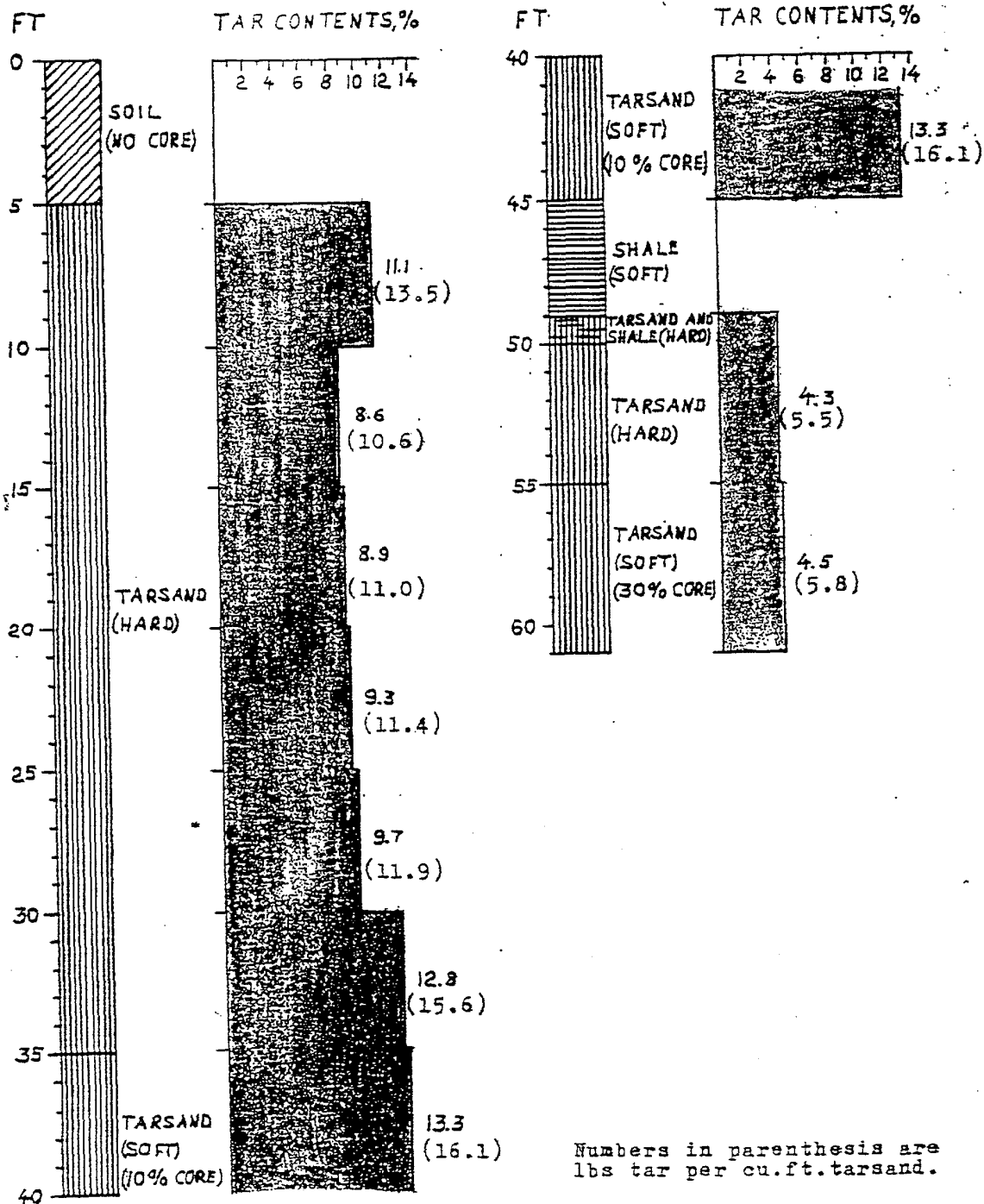
WELL LOG
129 W/75 N. (B3-9)



L9-203.
AUG.30.1957.89

Figure 5

WELL LOG 138 W/40 N. (B4-5)

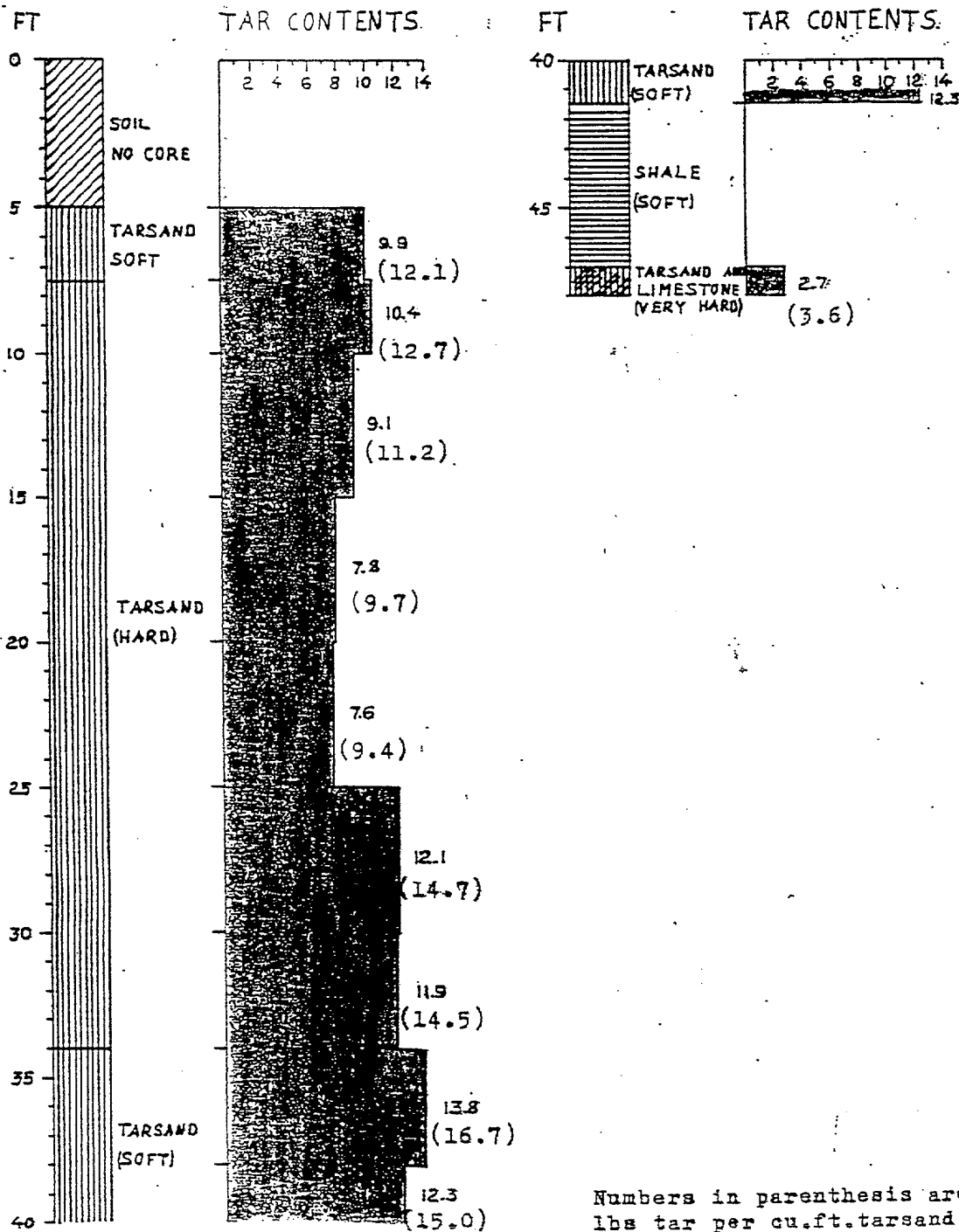


Numbers in parenthesis are
lbs tar per cu.ft.tarsand.

Figure 6

L9-212
OCT. 18. 1957. 88.

WELL LOG
147 W/45 N. (B5-6)



Numbers in parenthesis are
lbs tar per cu.ft.tarsand.

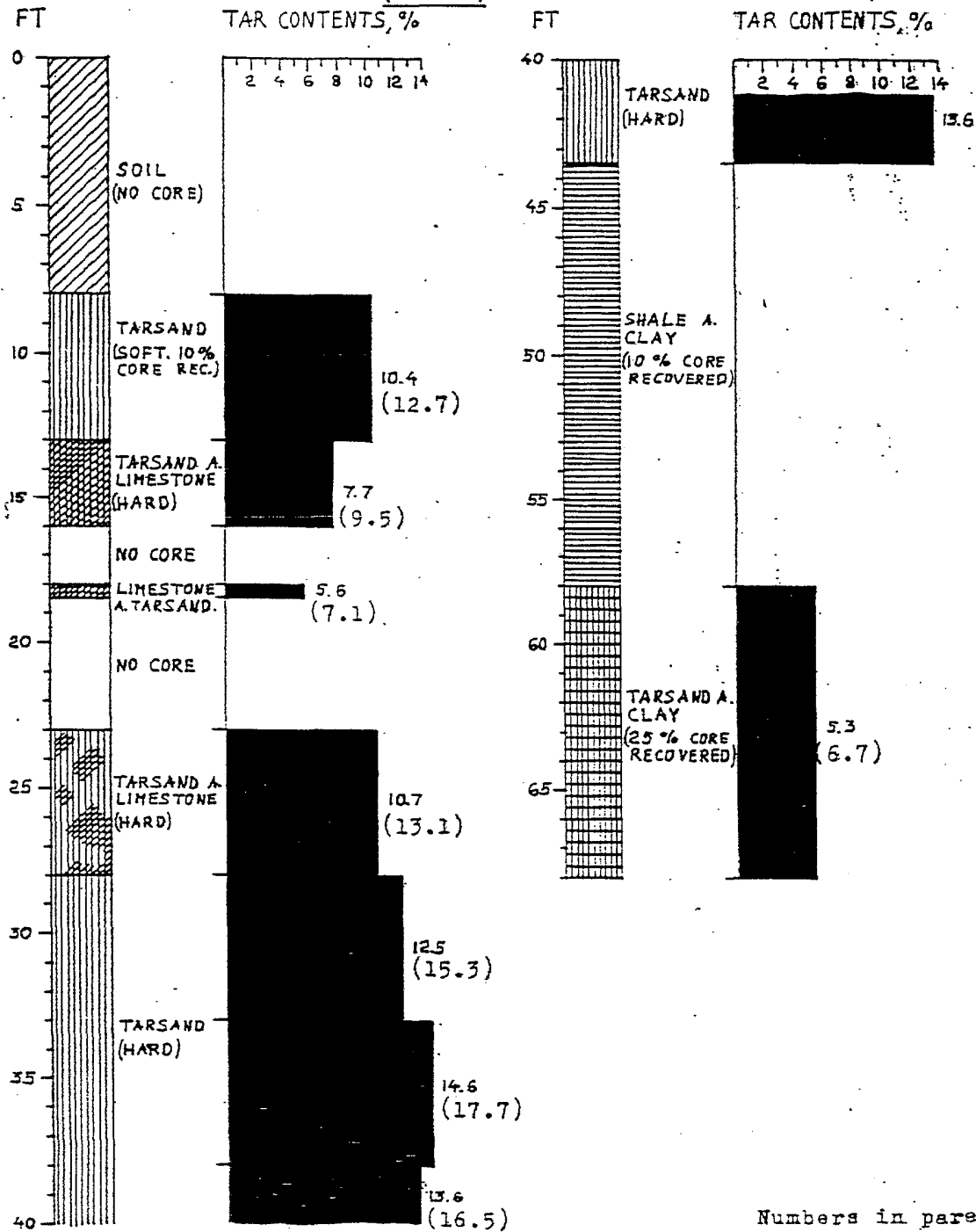
Figure 7

L9-204
1957.MAY 2. 830

WELL LOG.

162W/O.

(T61.)

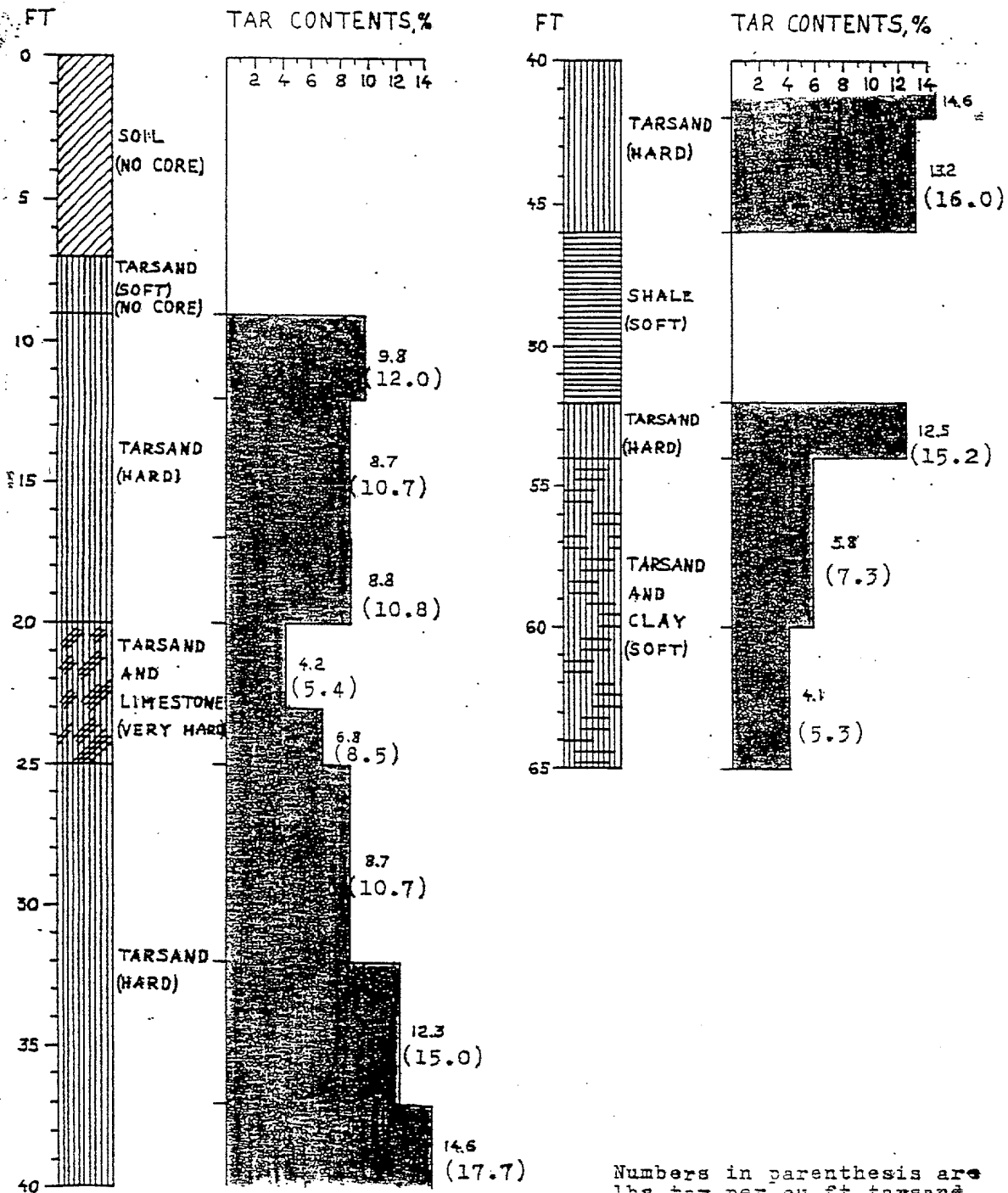


Numbers in parenthesis
are lbs tar per cu.ft.
tarsand.

Figure 8

L9-205
OCT. 18. 1957. 89

WELL LOG 155 W/10 N. (B6-2.)

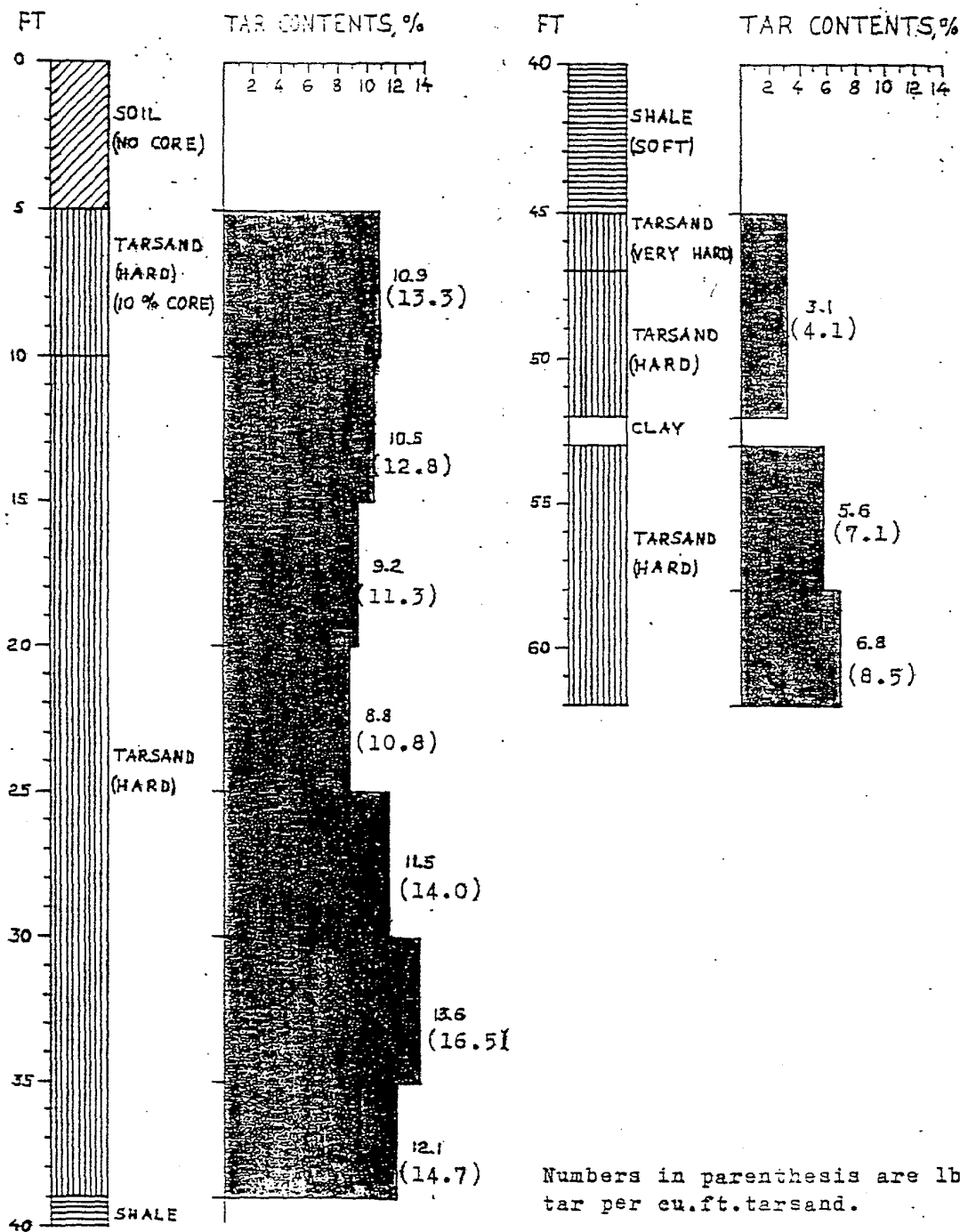


Numbers in parenthesis are
lbs tar per cu.ft. tarsand.

Figure 9

L9-206.
AUG. 30. 1957. 28.

WELL LOG 155 W/80 N. (B6-9)

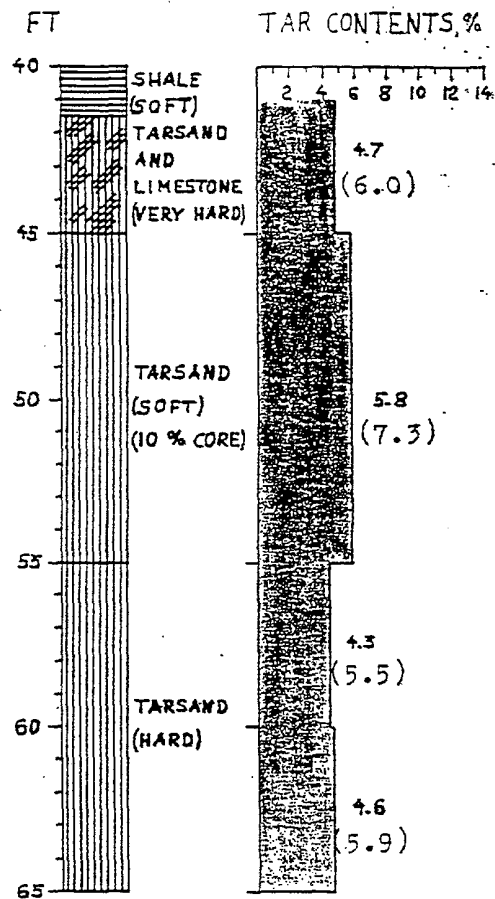
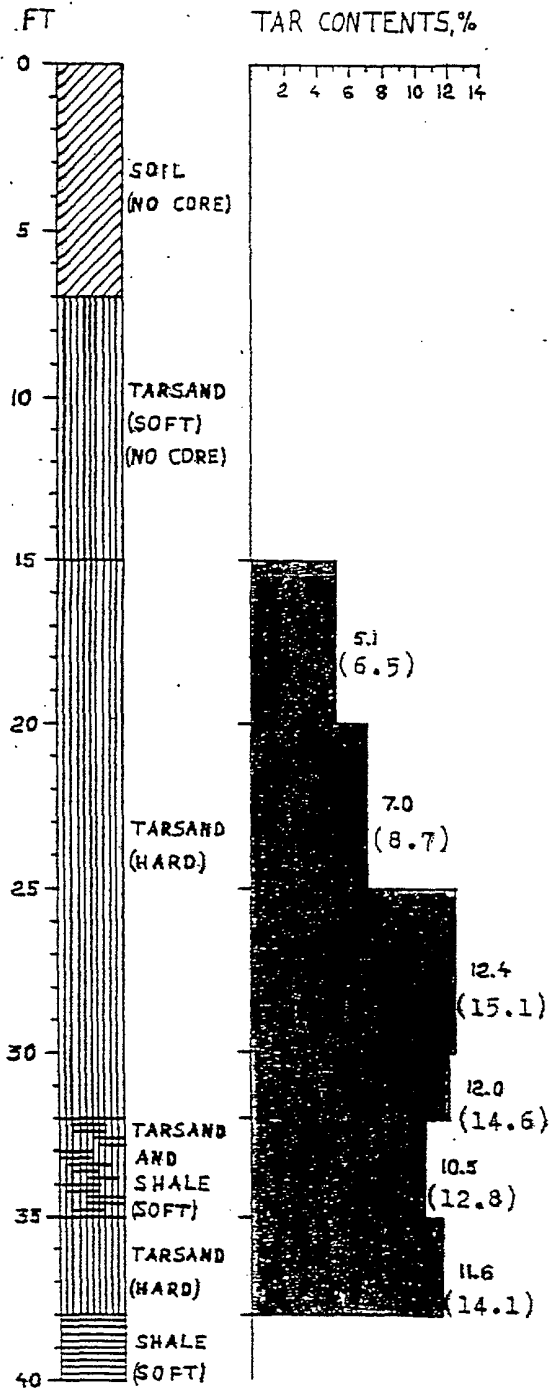


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 10

L9-207
AUG. 30, 1957

WELL LOG.
173 W/40 N. (B8-5)

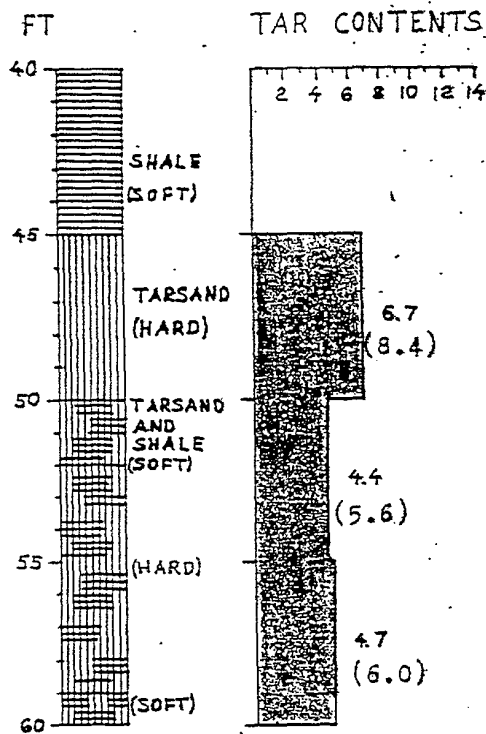
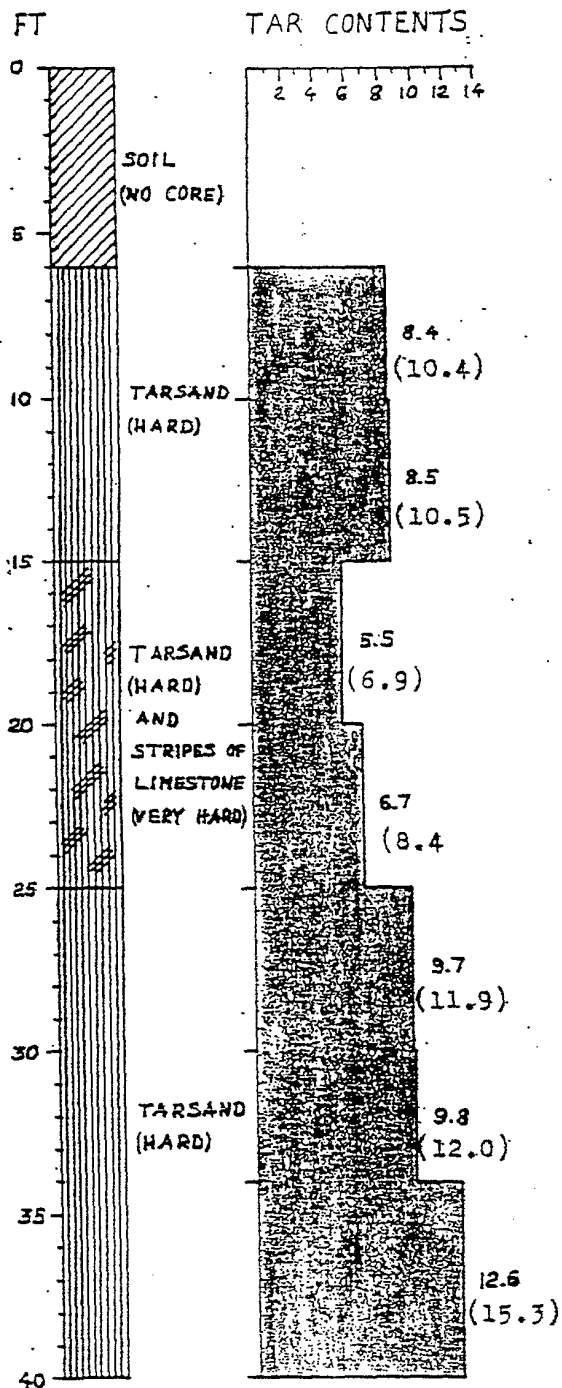


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 11

L9-211.
OCT. 18. 1957. 22.

WELL LOG.
173 W/50 N. (B8-6)

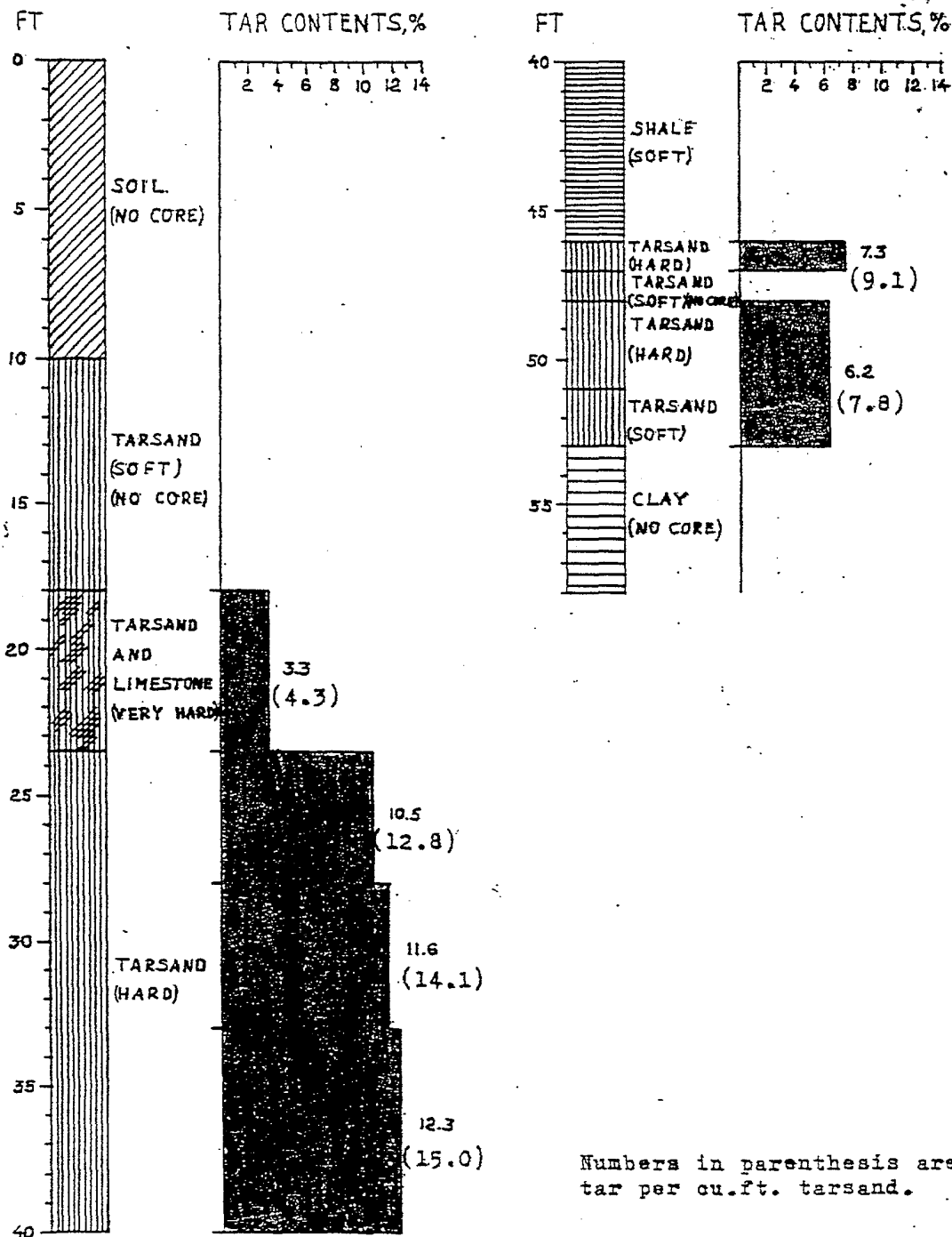


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 12

L9-208.
OCT. 18, 1957. *JP*

WELL LOG.
181 W/5 N. (B9-2)

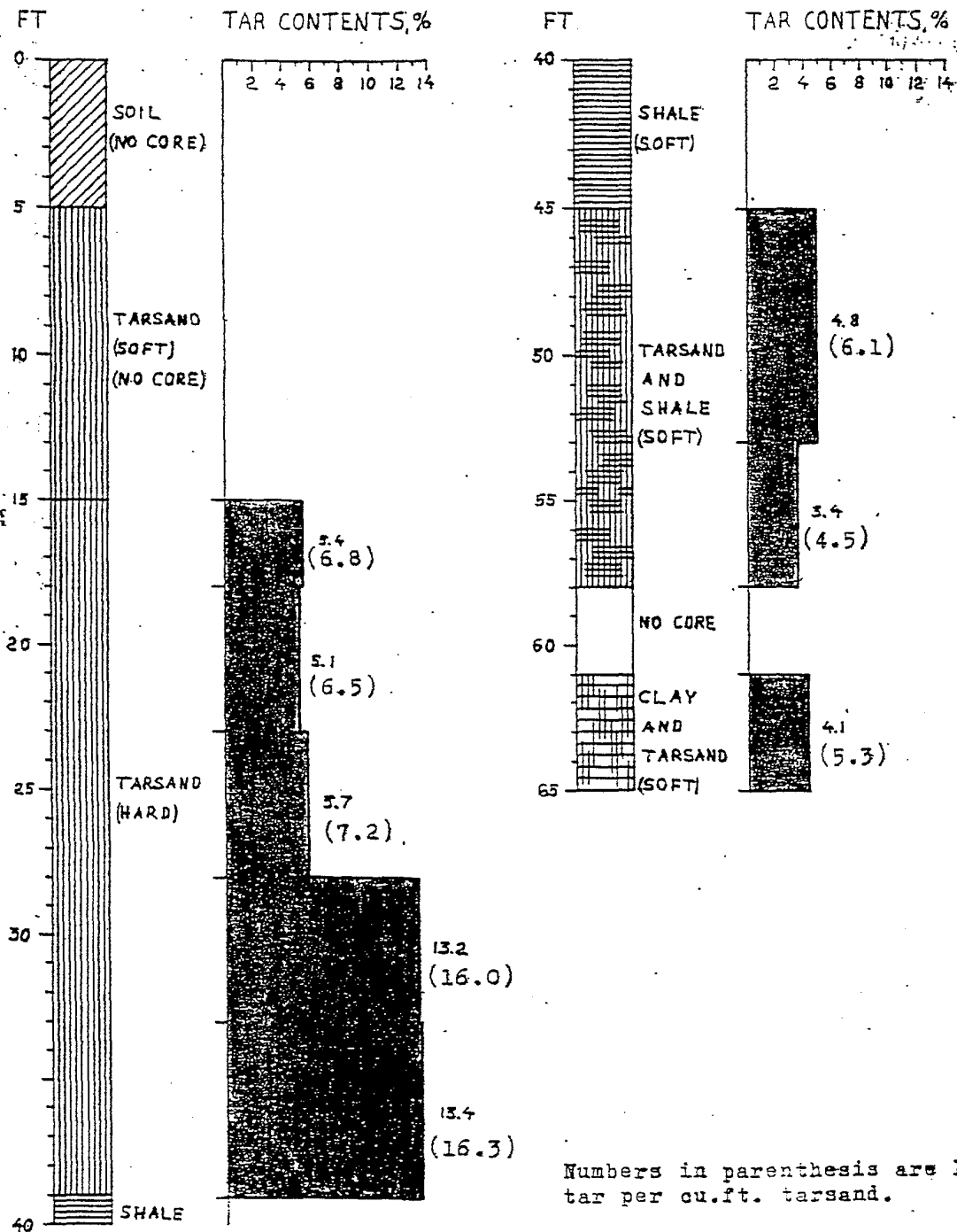


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 13

L9-209
OCT. 18. 1957. 28

WELL LOG
181 W/75 N. (B9-9)



Numbers in parenthesis are lbs tar per cu.ft. tarsand.

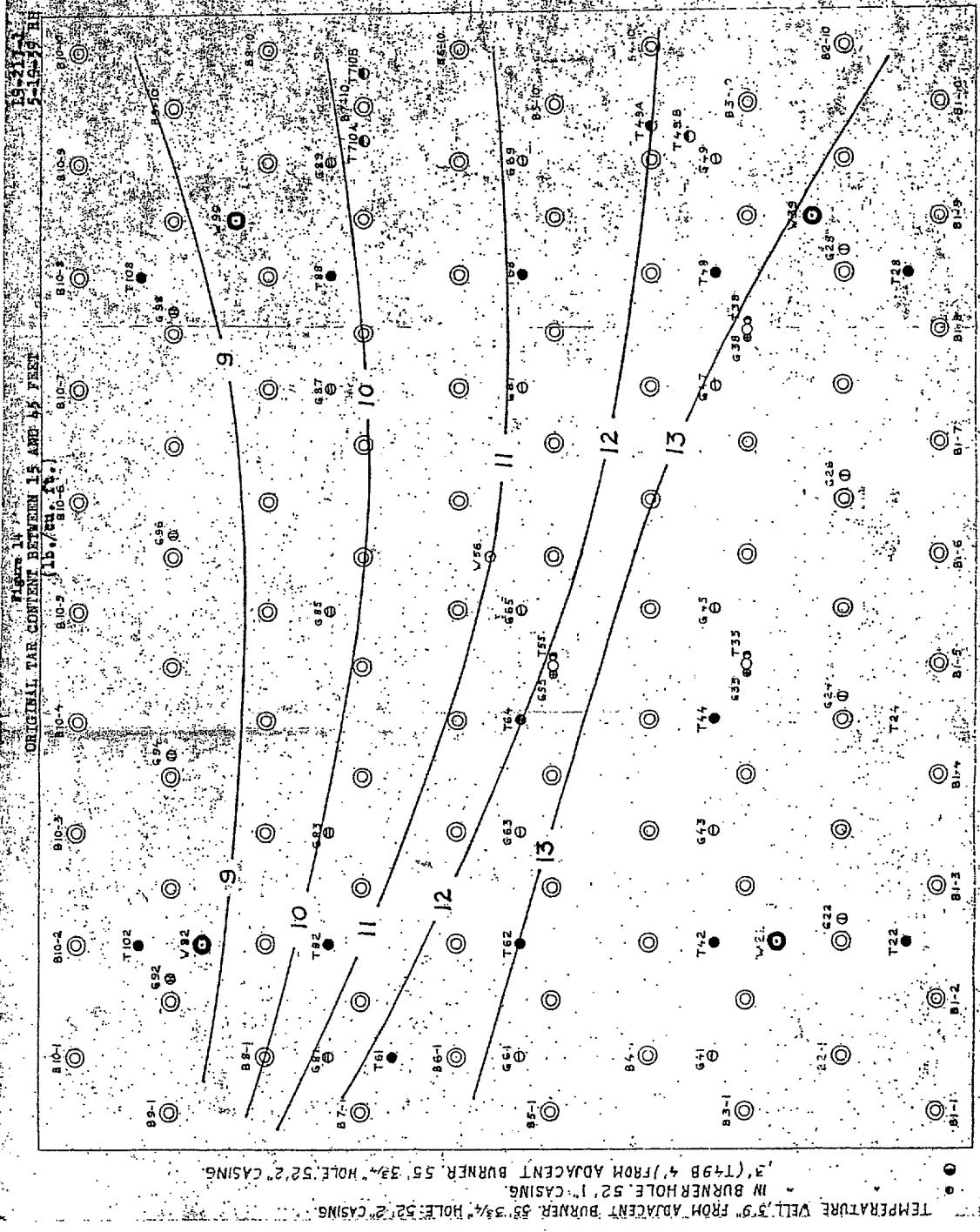
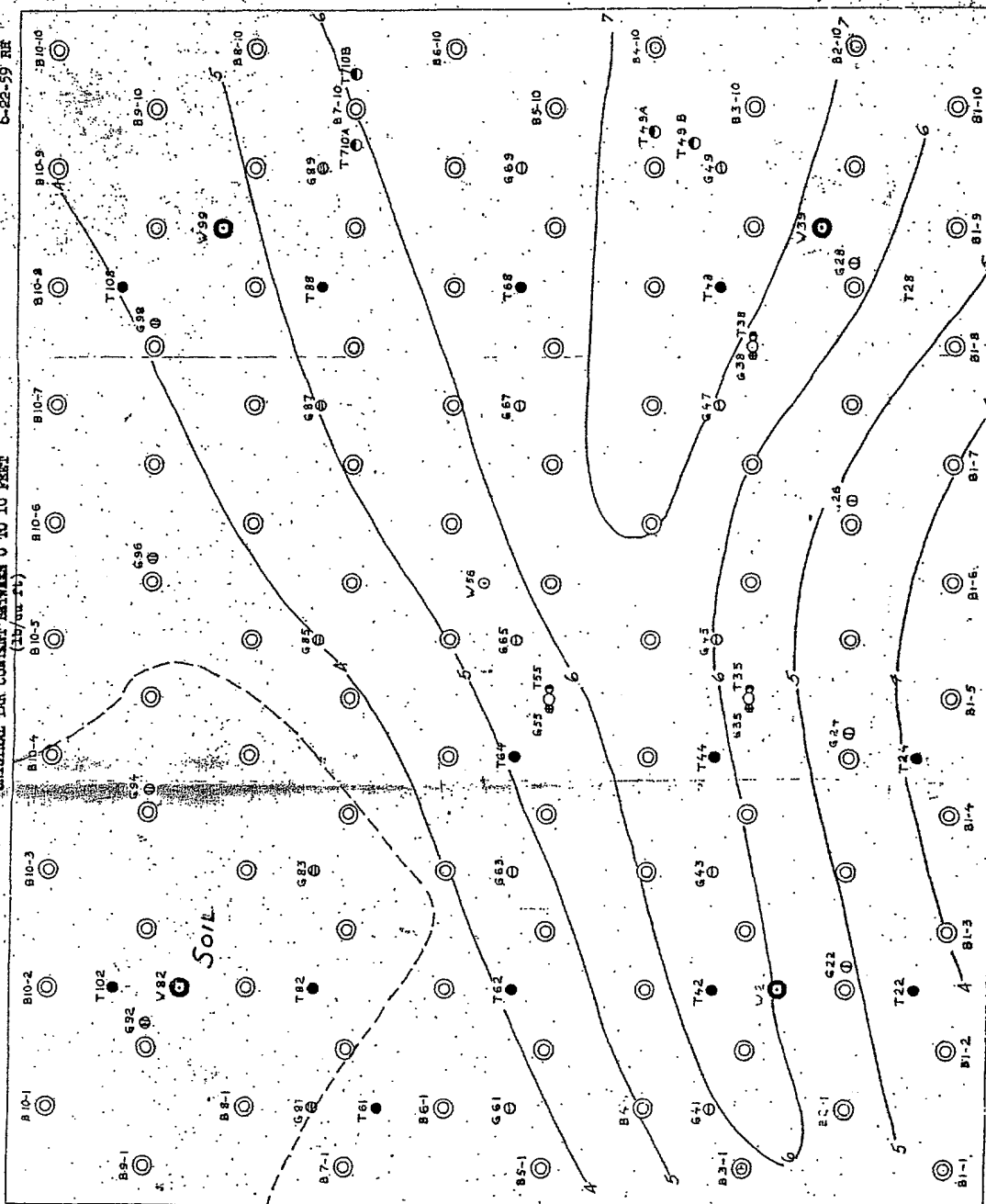
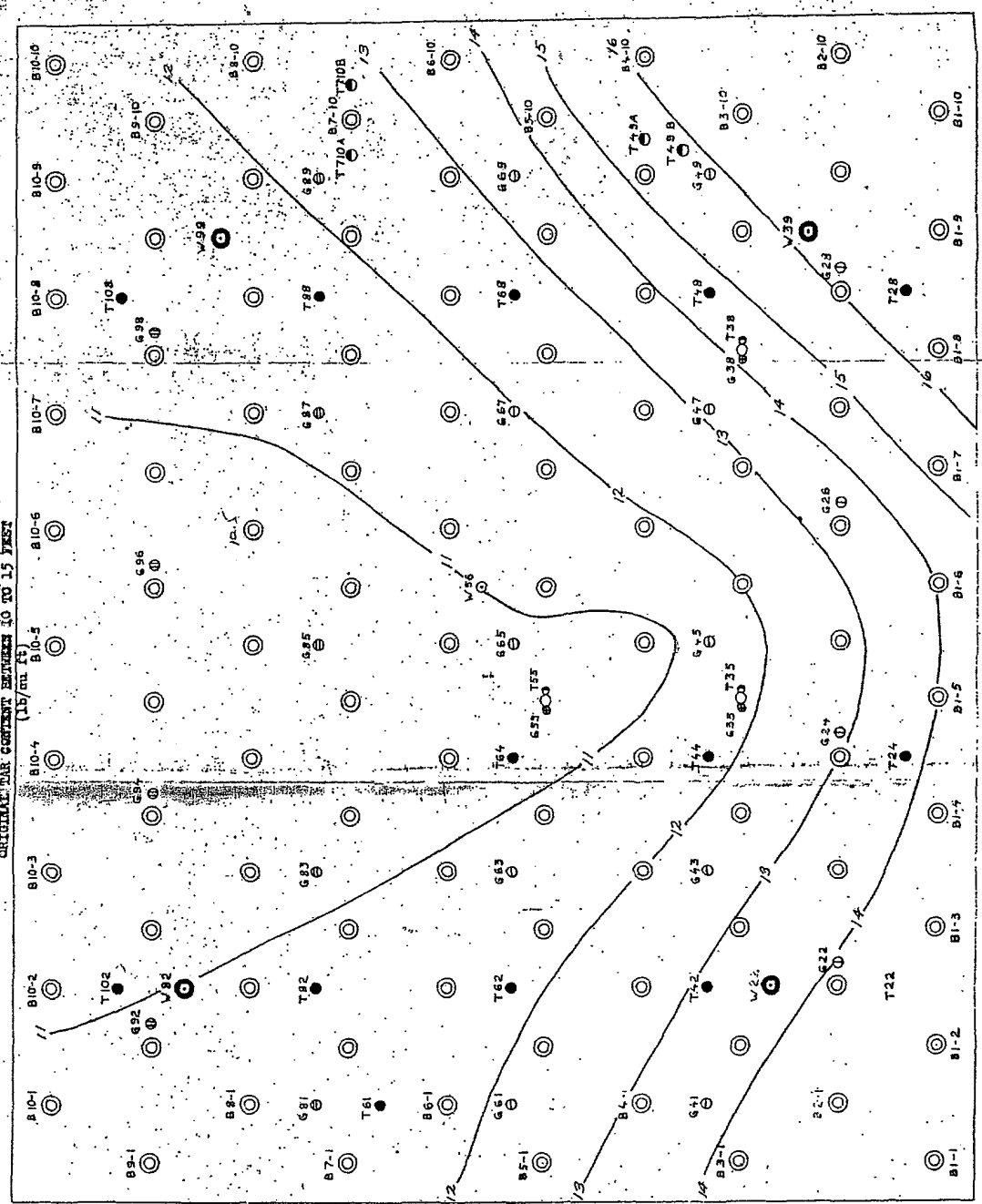


Figure 15.



● TEMPERATURE WELL 5.9' FROM ADJACENT BURNER. 55.33% HOLE. 52.2" CASING.
● IN BURNER HOLE. 52.1" CASING.
● 3' (149B 4') FROM ADJACENT BURNER. 55.33% HOLE. 52.2" CASING.

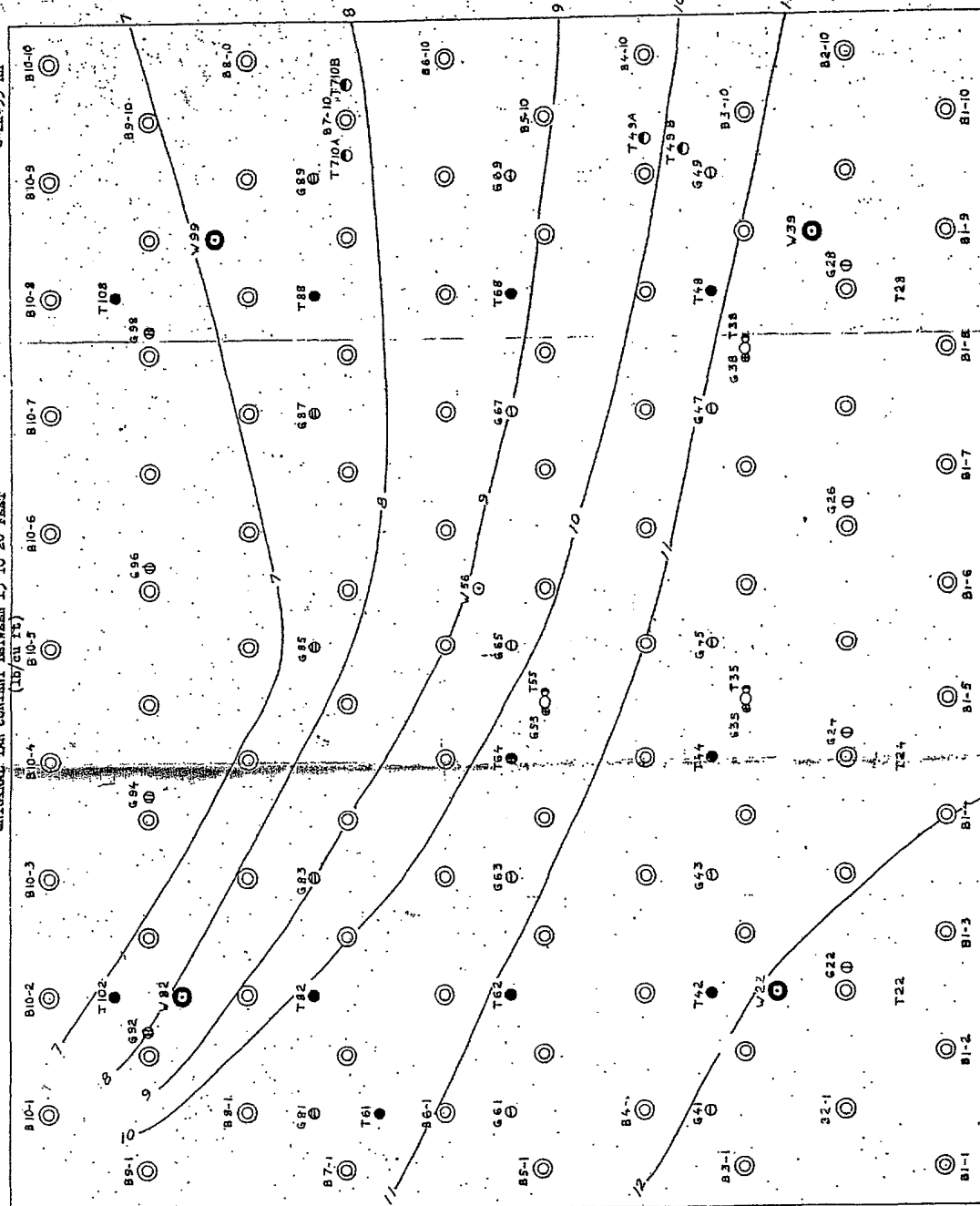
Figure 16
ORIGINAL TAR CONTENT BETWEEN 10 TO 15 FEET
(lb/ cu ft)



TEMPERATURE VELL 5.9" FROM ADJACENT BURNER. 55.33% HOLE. 52.2" CASING.
* IN BURNER HOLE. 52.1" CASING.
* (T498 4") FROM ADJACENT BURNER. 55.33% HOLE. 52.2" CASING.

13-217-4
6-22-59 RH

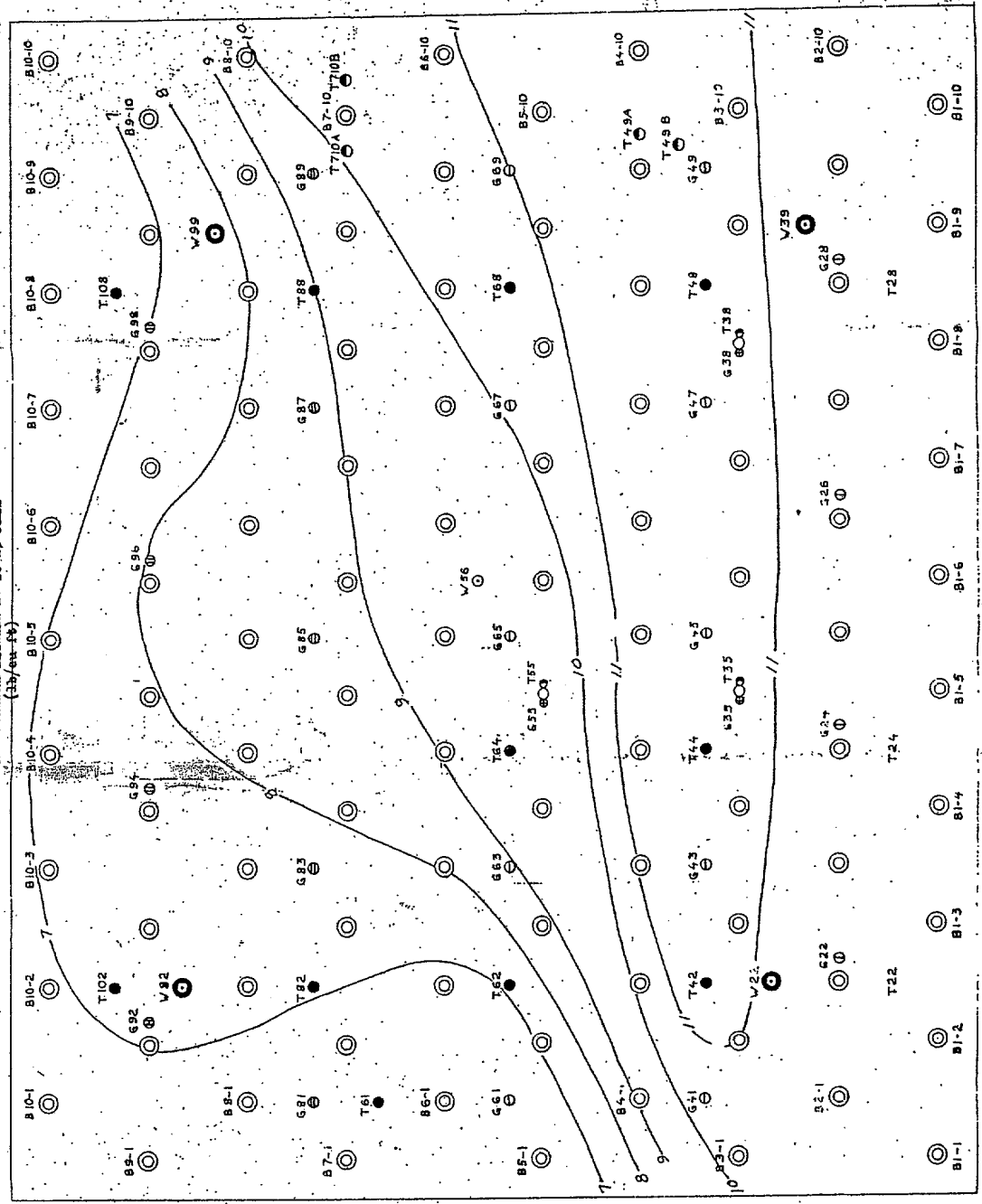
Figure 17
ORIGINAL TAR CONTENT BETWEEN 15 TO 20 FEET
(lb/gal ft)



TEMPERATURE WELL 5'9" FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.
IN BURNER HOLE. 52.1" CASING.
3' (T498 4') FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.

19-817-5
6-22-59 RH

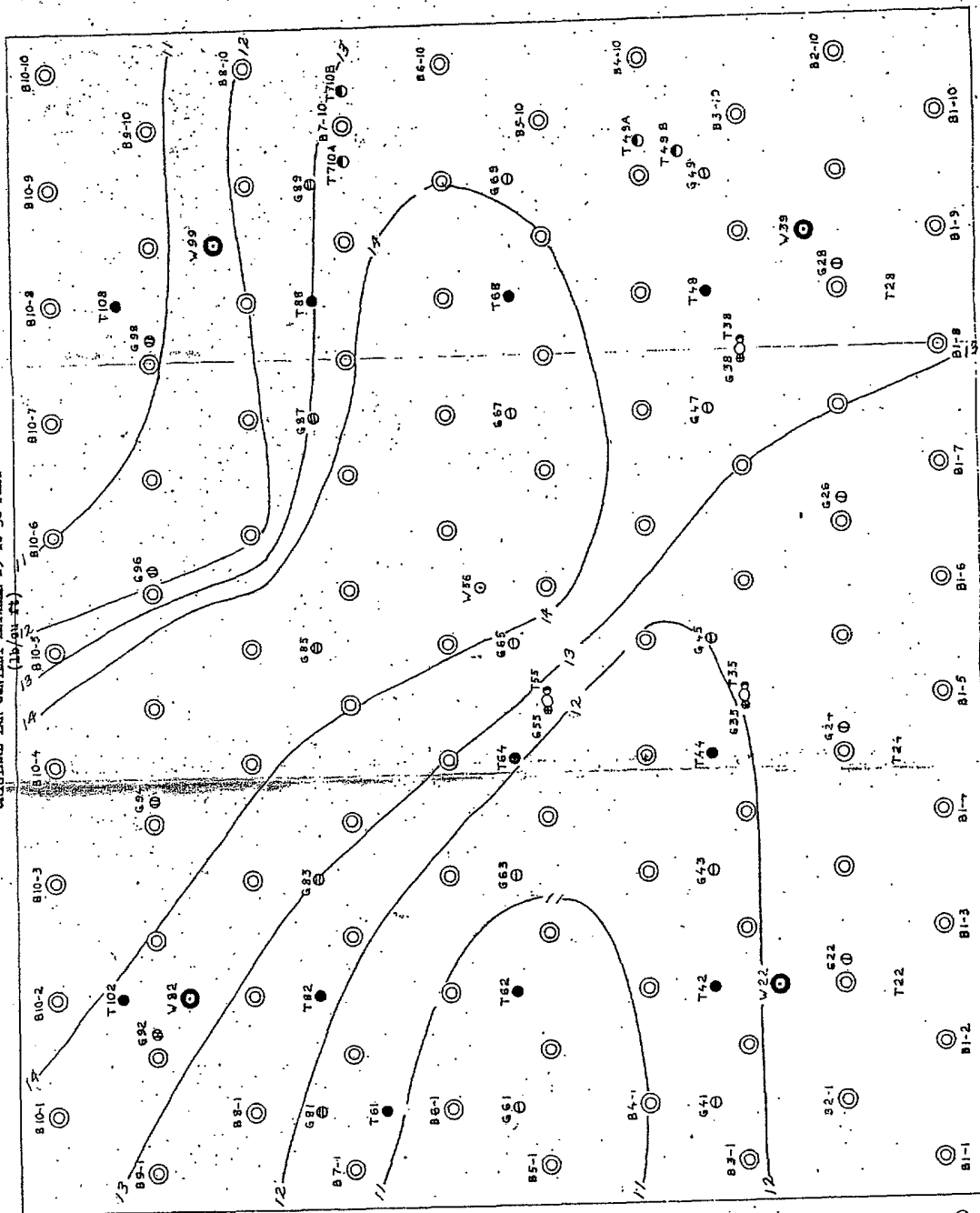
Figure 18
ORIGINAL BAR COUNT BETWEEN 20 TO 25 FEET
(13/08-54)



TEMPERATURE WELL 5.9' FROM ADJACENT BURNER. 55" 3/4" HOLE. 52' 2" CASING.
W BURNER HOLE. 52' 1" CASING.
3' (T49B 4') FROM ADJACENT BURNER. 55" 3/4" HOLE. 52' 2" CASING.

19-217-6
6-22-59 RE

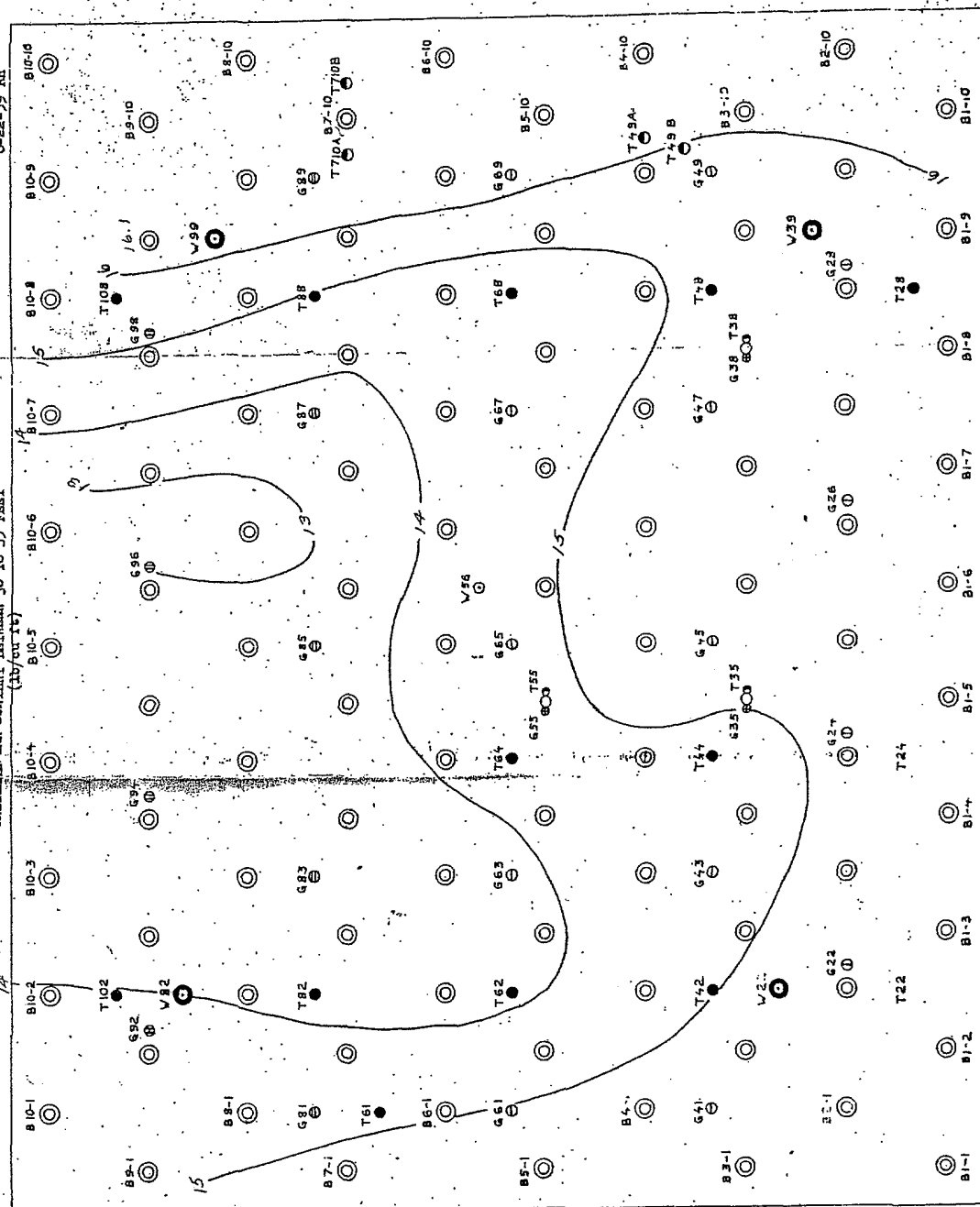
Figure 19
ORIGINAL TAR CONTENT BETWEEN 25 TO 30 FEET
(15/100 FT)



● ● ● ●
TEMPERATURE WELL 5.9" FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.
IN BURNER HOLE. 52' 1" CASING.
3' (1498 4) FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.

19-217-7
6-22-59 RH

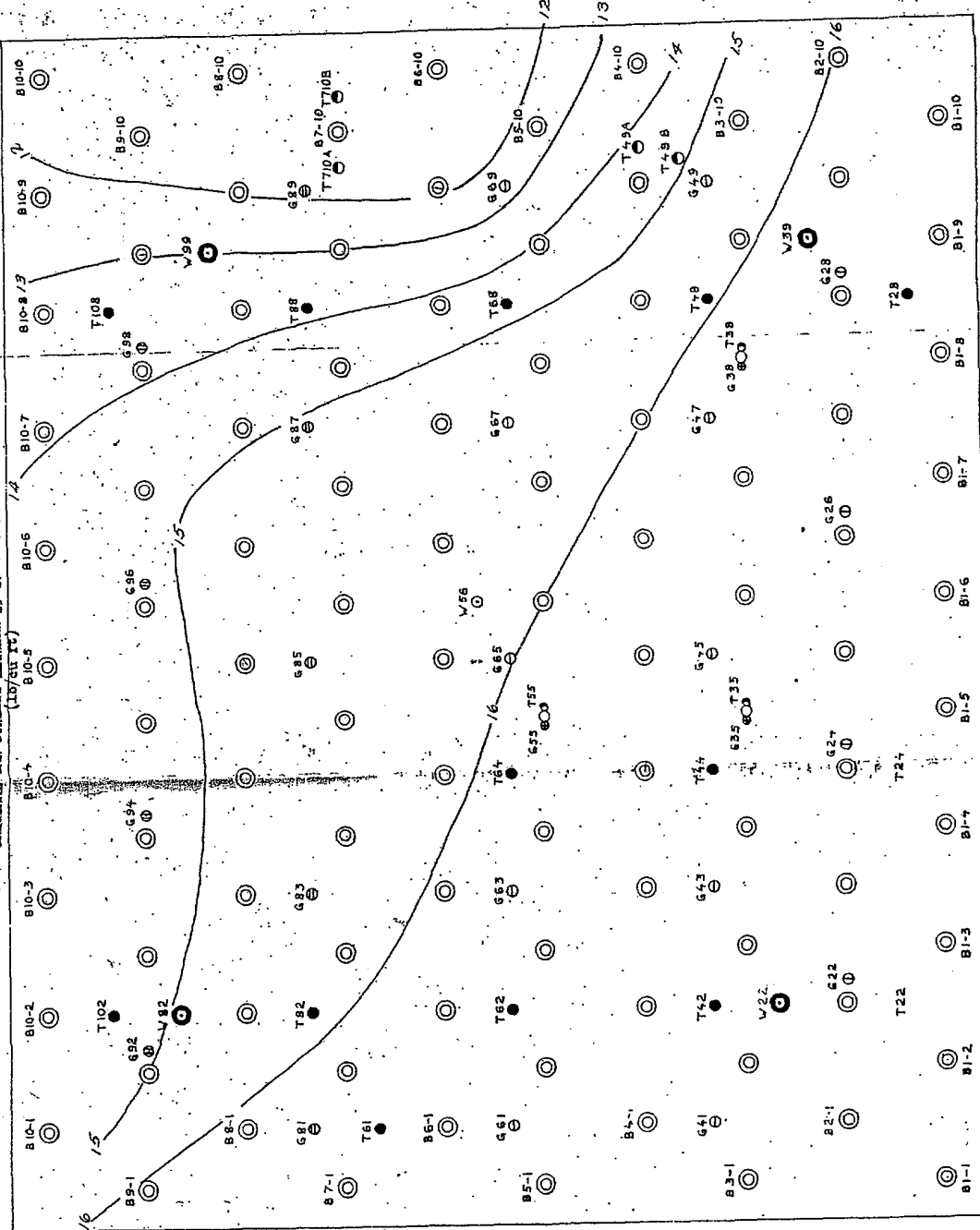
Figure 20
ORIGINAL AIR CONTENT BETWEEN 30 TO 35 FEET
(1b/ou 1v)

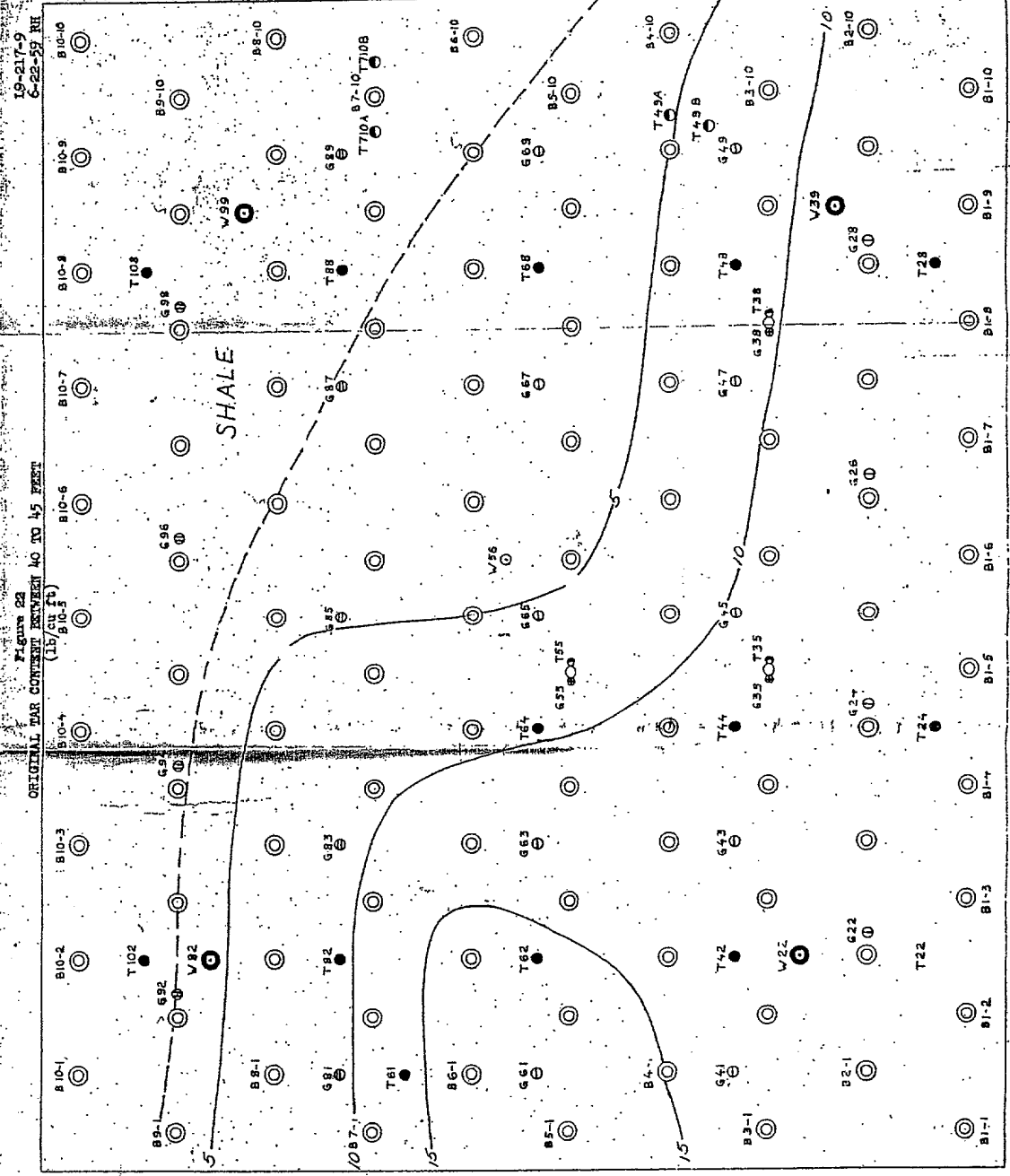


TEMPERATURE WELL 5'9" FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.
IN BURNERHOLE. 52' 1" CASING.
3' (T49B 4') FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.

19-217-8
6-22-59 RH

Figure 21
ORIGINAL TAR CONTENT BETWEEN 35 TO 40 FEET
(10/6u It.)



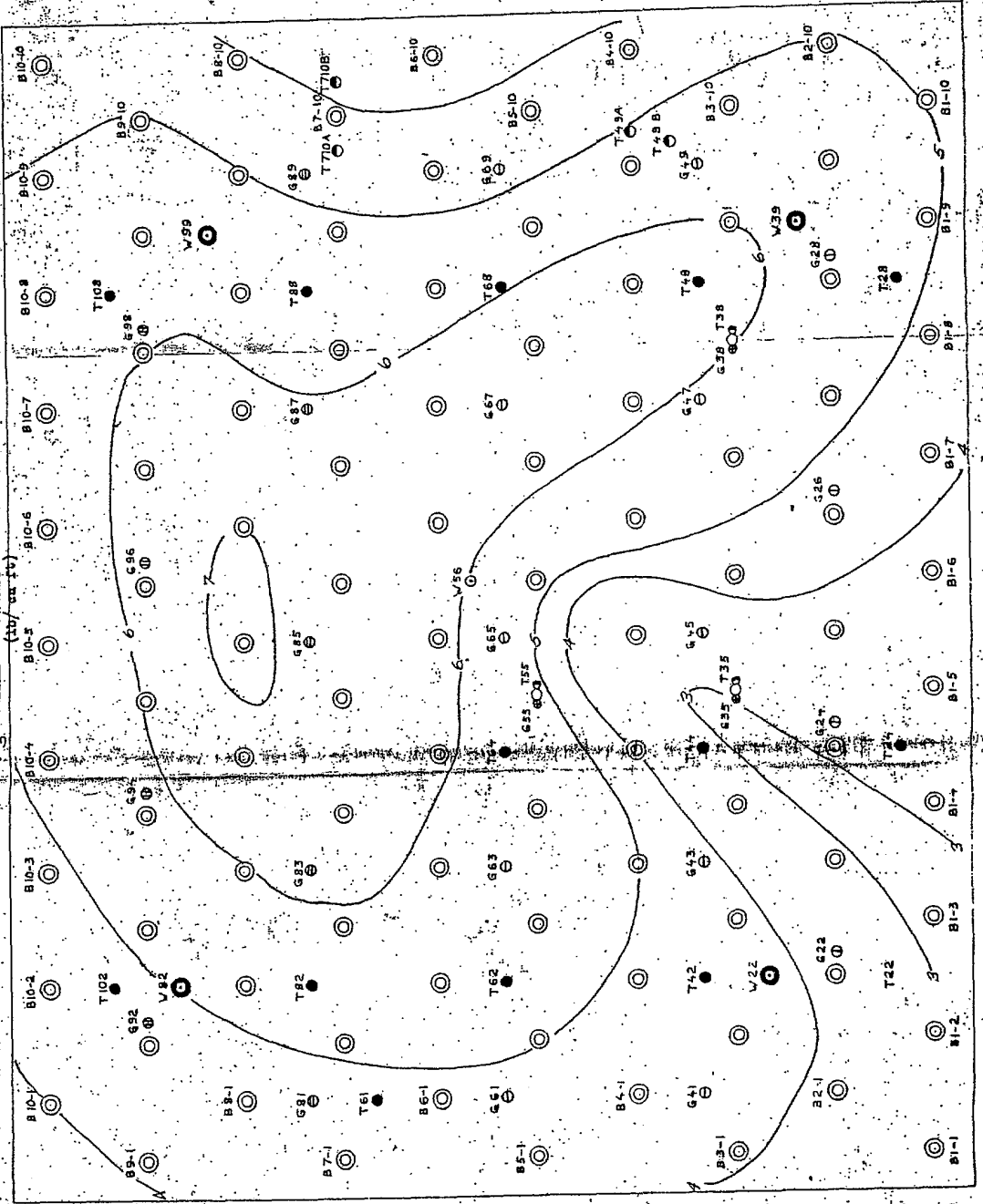


19-217-9
6-22-59 RH

FIGURE 22
ORIGINAL BAR CONTENT RANGES 40 TO 15 FEET
(15/10.5)

● ● ● ●
● TEMPERATURE WELL, 5.9' FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.
● IN BURNER HOLE, 52' 1" CASING.
● 3' (T49B 4') FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.

FIGURE 23
ORIGINAL TAP CONTENT BETWEEN 45 TO 55 FEET
(10/10/10)



● TEMPERATURE WELL, 5.9" FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.
 ● IN BURNER HOLE, 52' 1" CASING.
 ● 3" (149B 4) FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.

HOLE PATTERN OF TEST L9

L9-101
JAN 21 1958
REVISED 3.15.58 AP

- BURNER, 15' 5 5/8" AND 40' 4 3/4" HOLE, 52' 2 1/2" CASING.
- CONCENTRIC GASWELL AROUND BURNER, 13' 4 5/8" HOLE, 15' 1 1/2" CASING.
- SEPARATE GASWELL IN BURNERHOLE, 15' 1 1/2" CASING.
- 2' FROM ADJACENT BURNER, 20' 3 3/4" HOLE, 15' 1 1/2" CASING.
- 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15'; 15' 1 1/2" CASING.
- CONCENTRIC GASWELL AROUND WATER VELL, 15' 4 5/8" HOLE, 15' 1 1/2" CASING.
- WATER WELL, 5' 9" FROM ADJ. BURNER, 55' 5 5/8" HOLE, 75' 5 5/8" TUBING, W56; 40' 3 1/2" AND 10' 4" TUBING.
- TEMPERATURE WELL, 5' 9" FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.
- IN BURNERHOLE, 52' 1" CASING.
- 3' (T+98 4') FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.

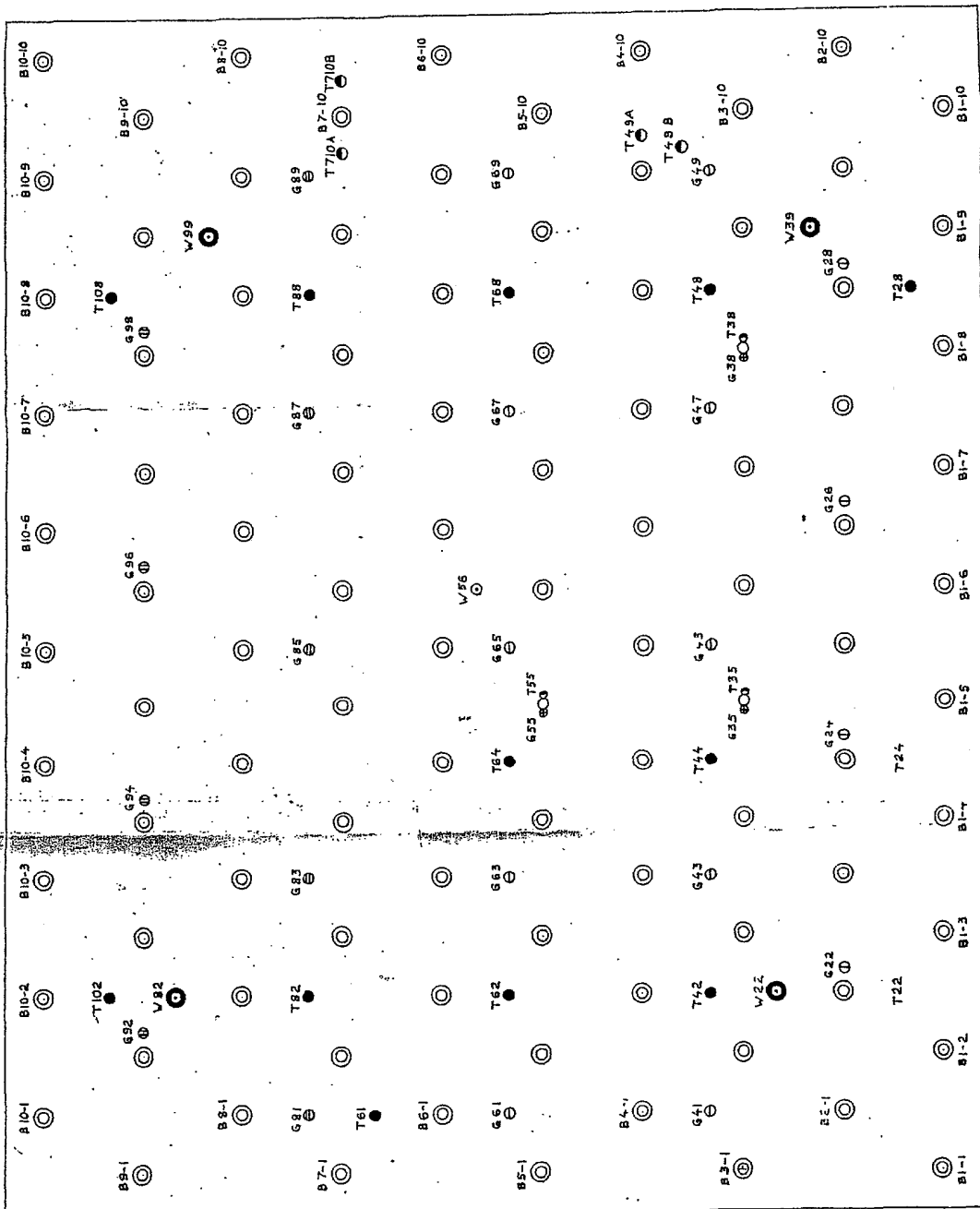


Figure 24

L9-100
I. 16. 1358.
M.E.

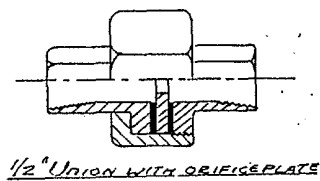


Figure 25

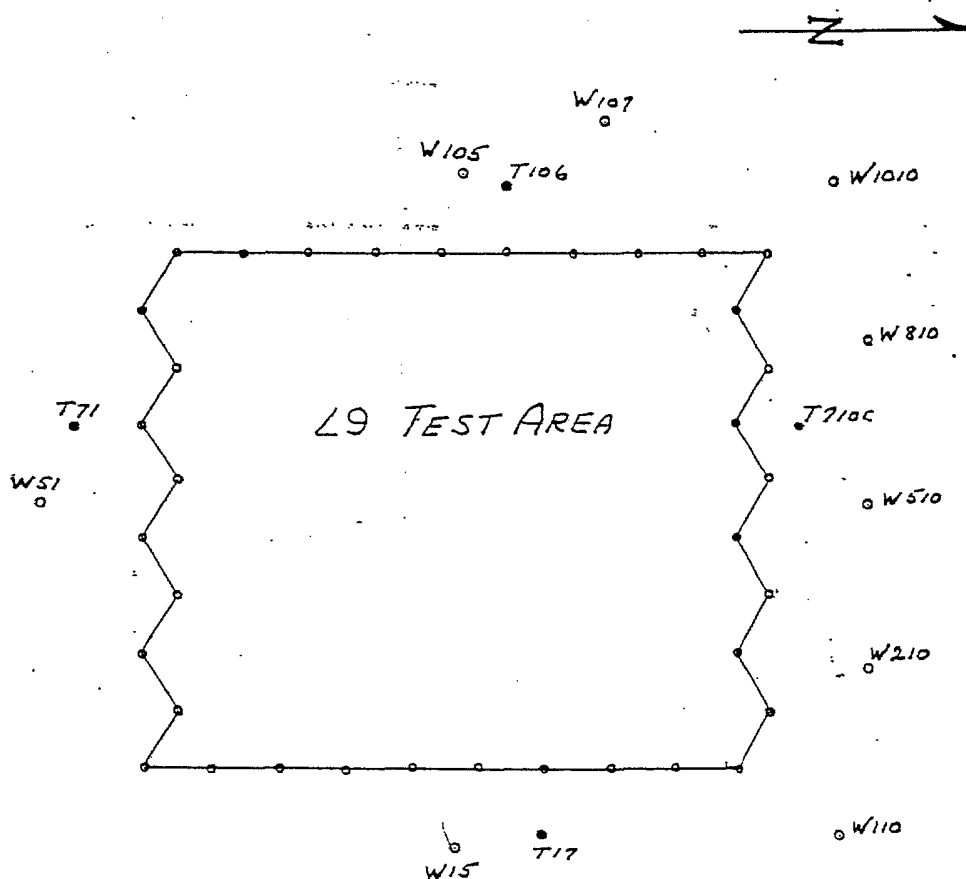
COUPLING AND WEARING.

BURNER CONE.

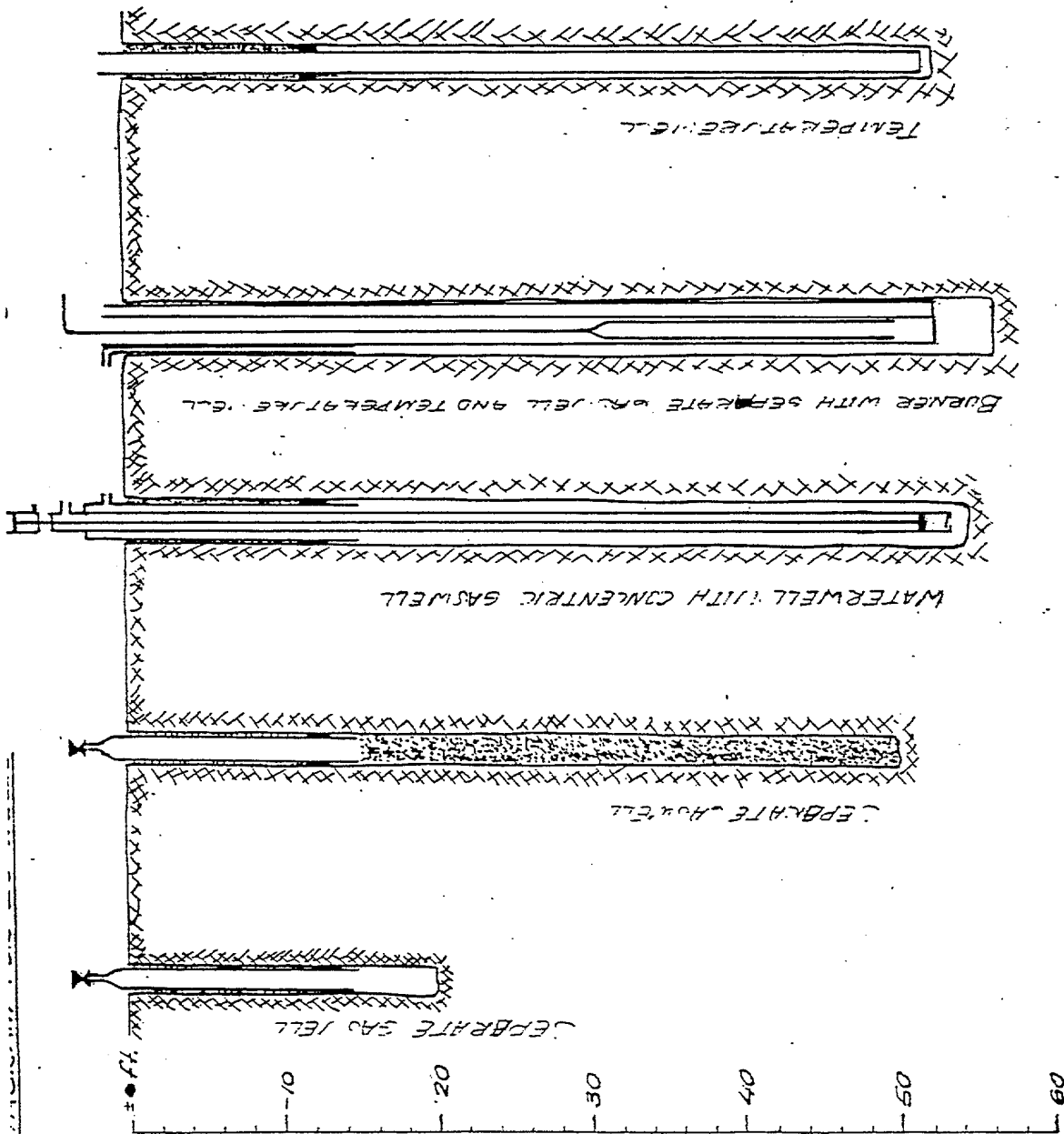
L9-105
5.26.59.HP

Figure 27

WATER WELLS AND TEMPERATURE WELLS OUTSIDE L9.



| <u>Well, No.</u> | <u>Locations</u> |
|------------------|--|
| W15,105 | 12 feet outside the edge of the field. |
| W51,105,110,210 | 15 " " " " " " |
| W510,810,1010 | 15 " " " " " " |
| W107 | 20 " " " " " " |
| T17 | 10 " " B1-7. |
| T71 | 10 " " B7-1. |
| T710C | 10 " " B7-10 |
| T106 | 10 " " B10-6 |



SYMBOLS FROM
DRAWING L9-101.

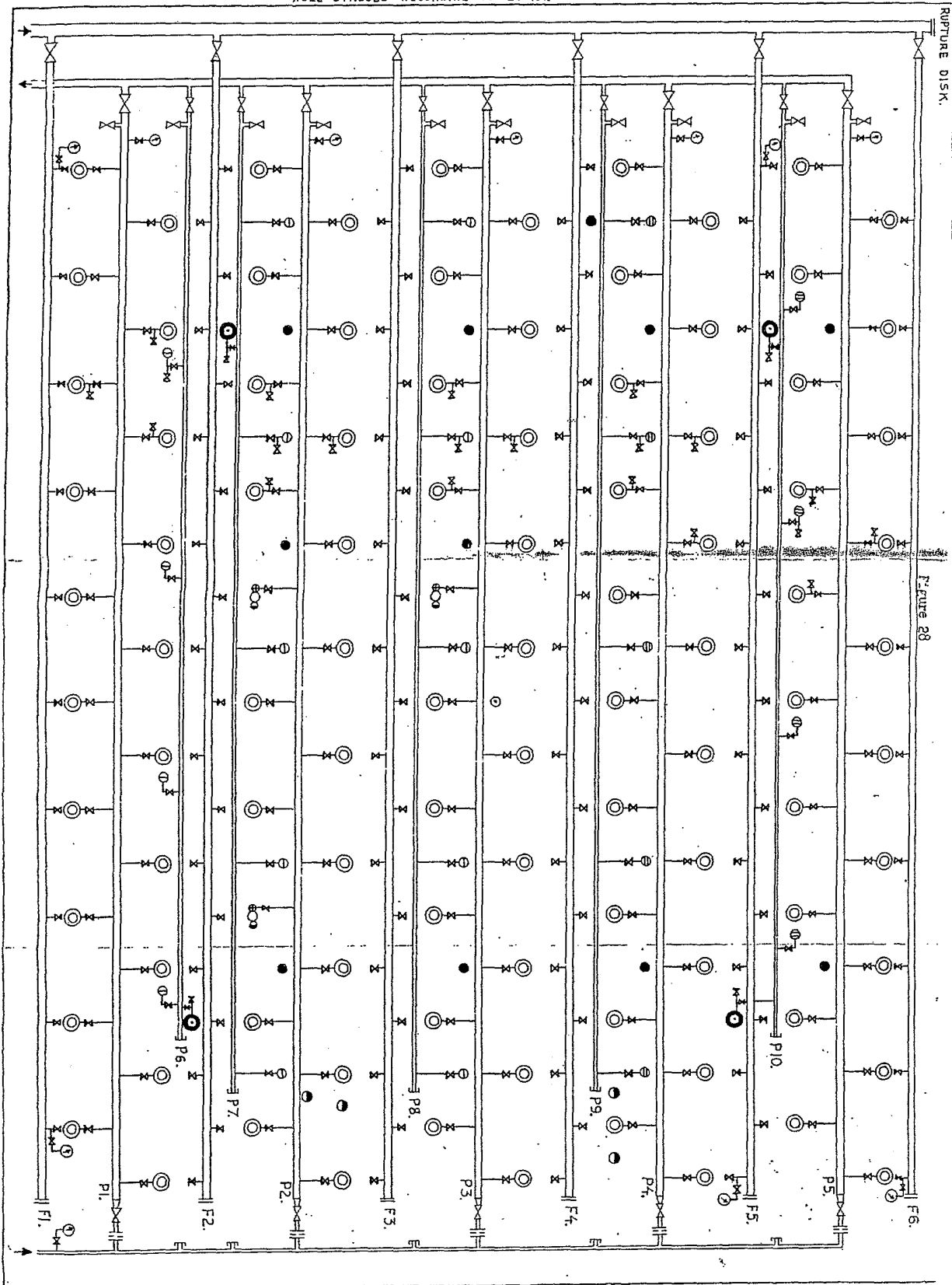


F-, P- AND R- LINES OF TEST L9.

F-LINE, 3"
 F-LINE, 2"
 P-LINE, 2"
 P-LINE, 1"
 R-LINE, 1"
 1/2" PIPE.

HOLE SYMBOLS ACCORDING TO L9-101.

L9-102
 JAN. 24, 1958. S.P.



IX 15 1958 ③

To L9

FUEL STATION FOR L9

Figure 29

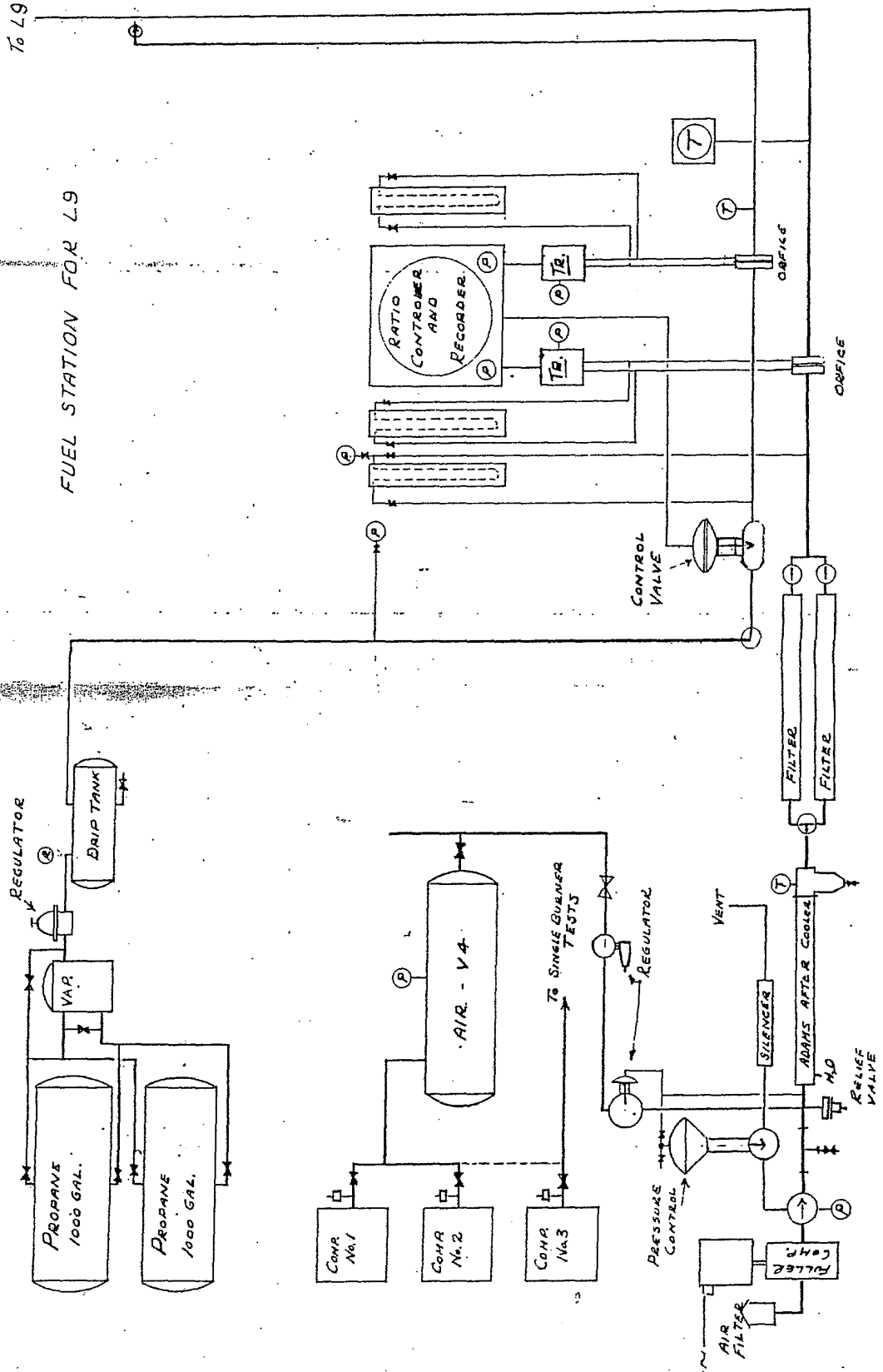
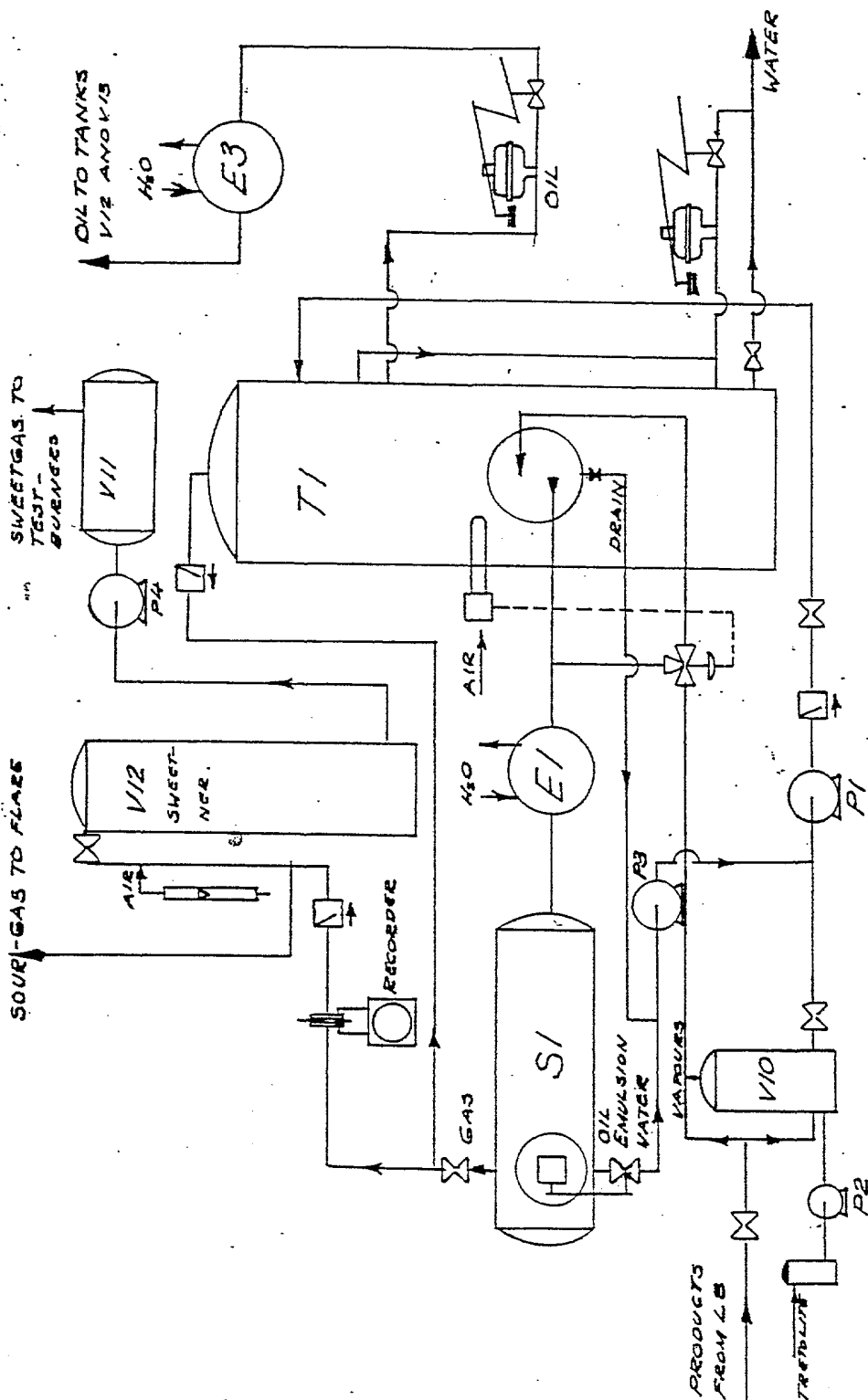


Figure 30

PRODUCT STATION
FOR L8A

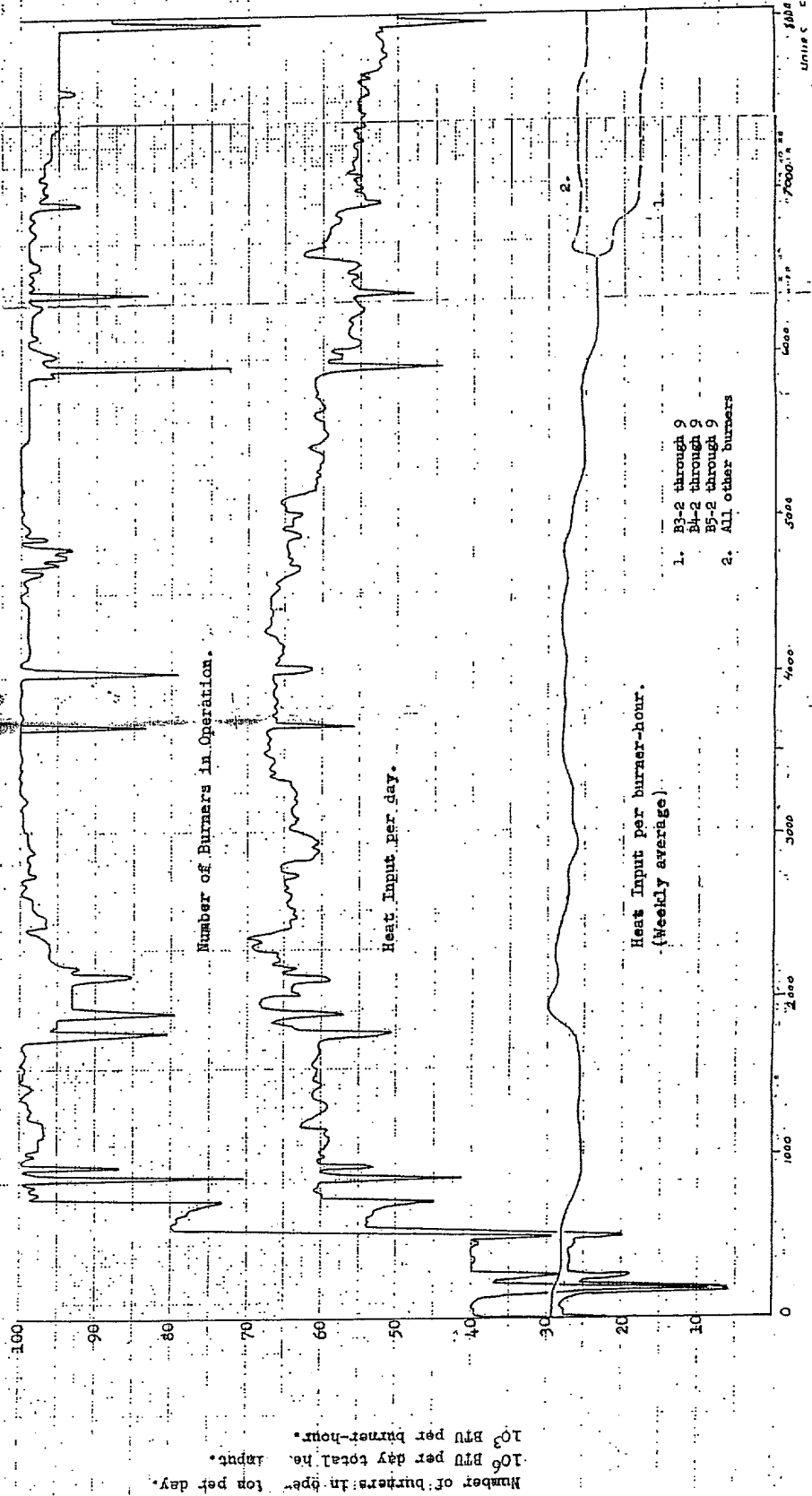
L8 - 110
10-16-1957



19-316.
3-25-59, BP

Figure 31

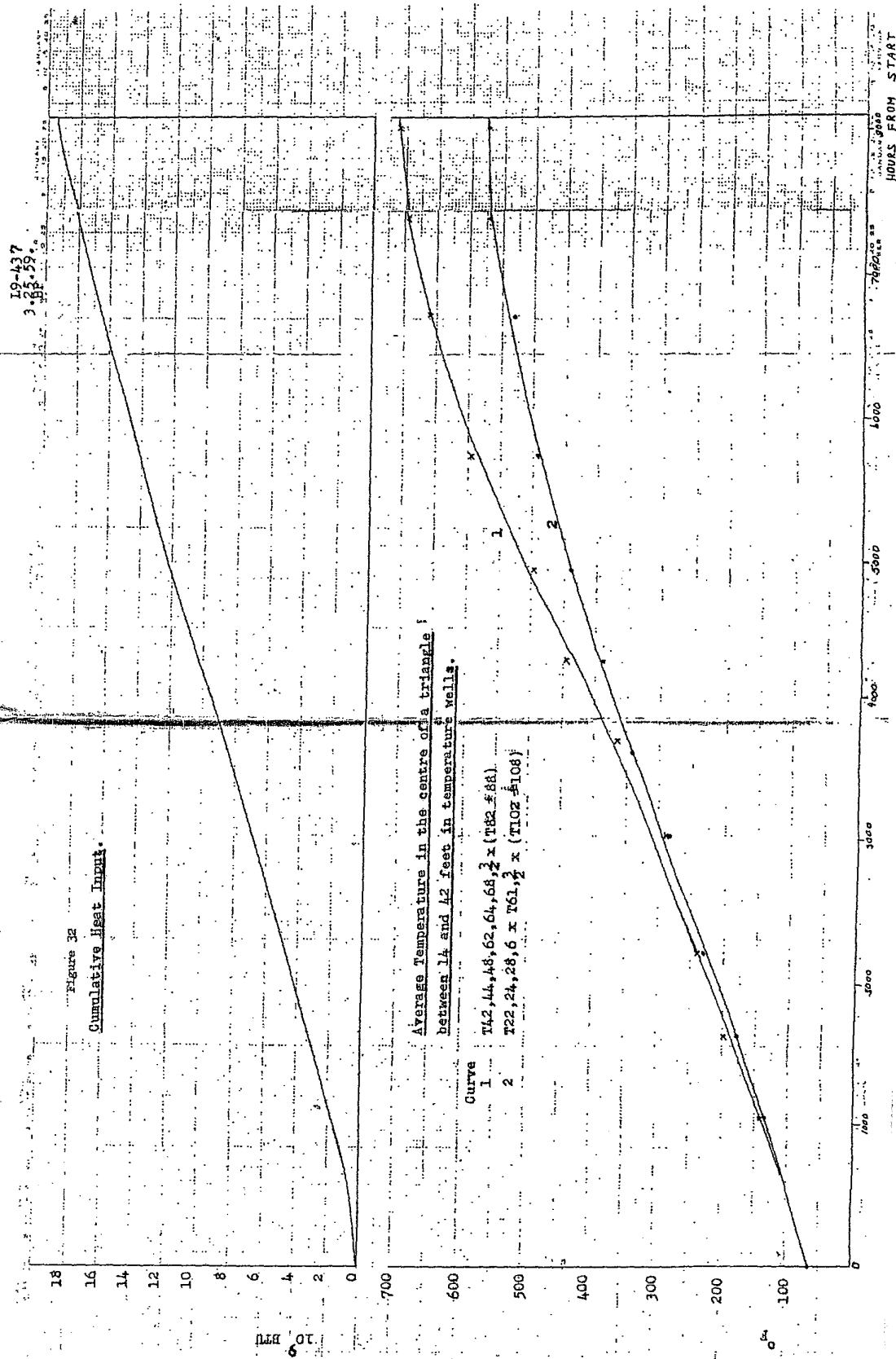
19 HEAT INPUT DATA.



Number of burners in operation per day.
 10^6 BTU per day total heat input.
 10^3 BTU per burner-hour.

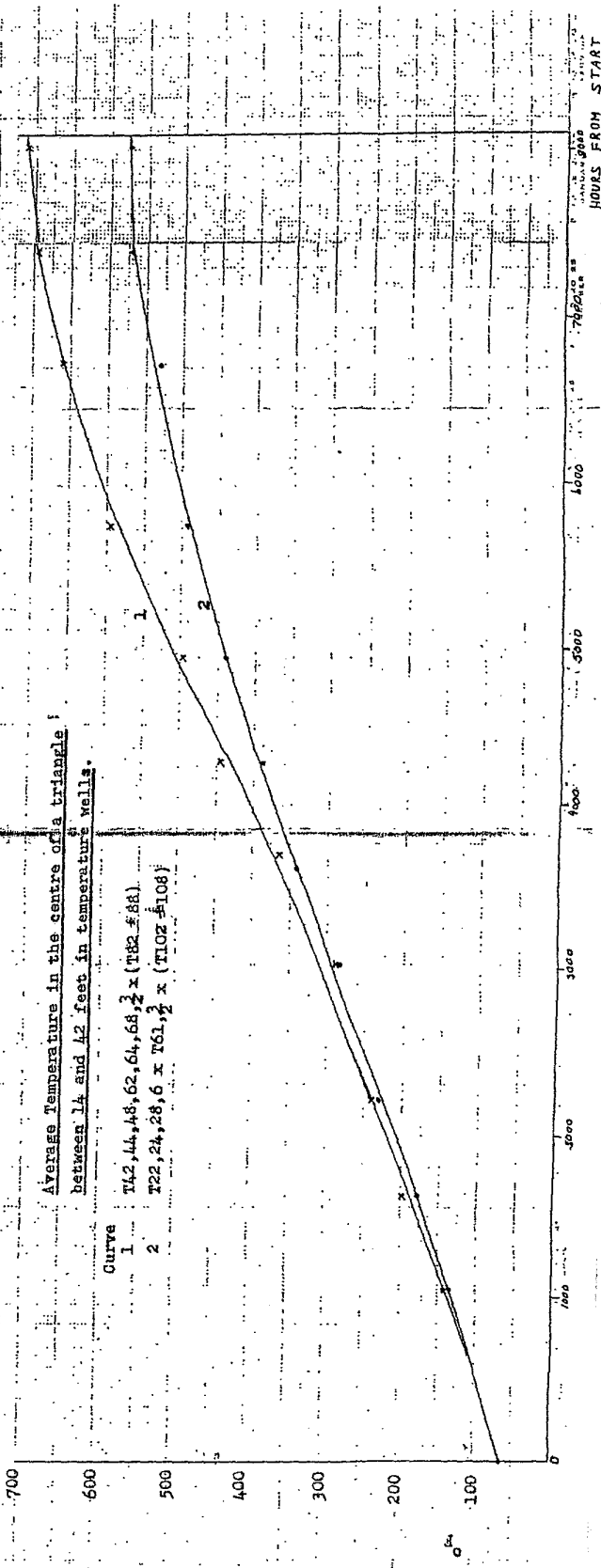
10-375

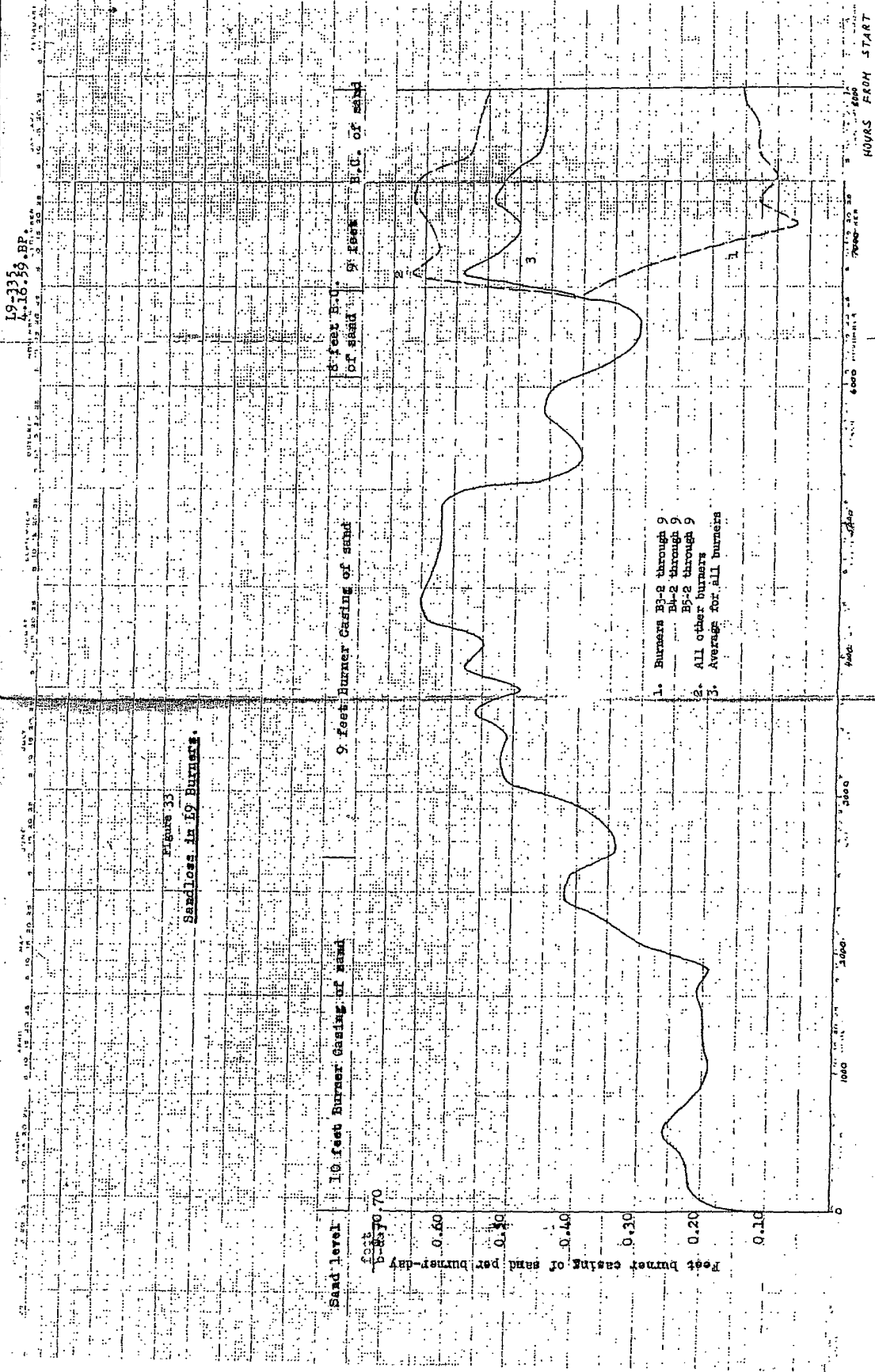
Figure 32
Cumulative Heat Input.



Average Temperature in the centre of a triangle
between 14 and 42 feet in temperature wells.

Curve
1 T12, 44, 48, 62, 64, 68, 72 x (T82 #88)
2 T22, 24, 28, 6 x T61, 2 x (T102 #108)





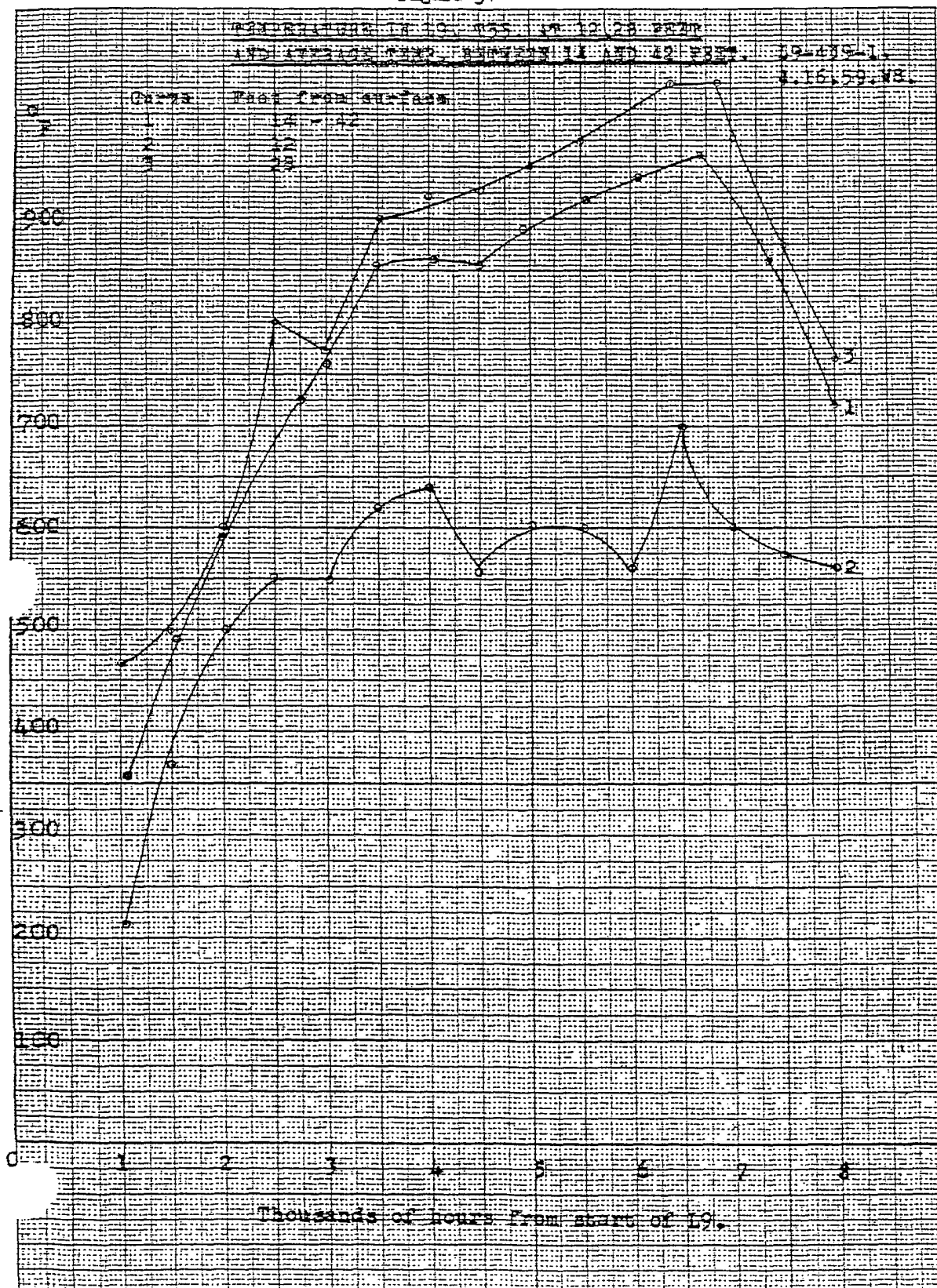


Figure 35

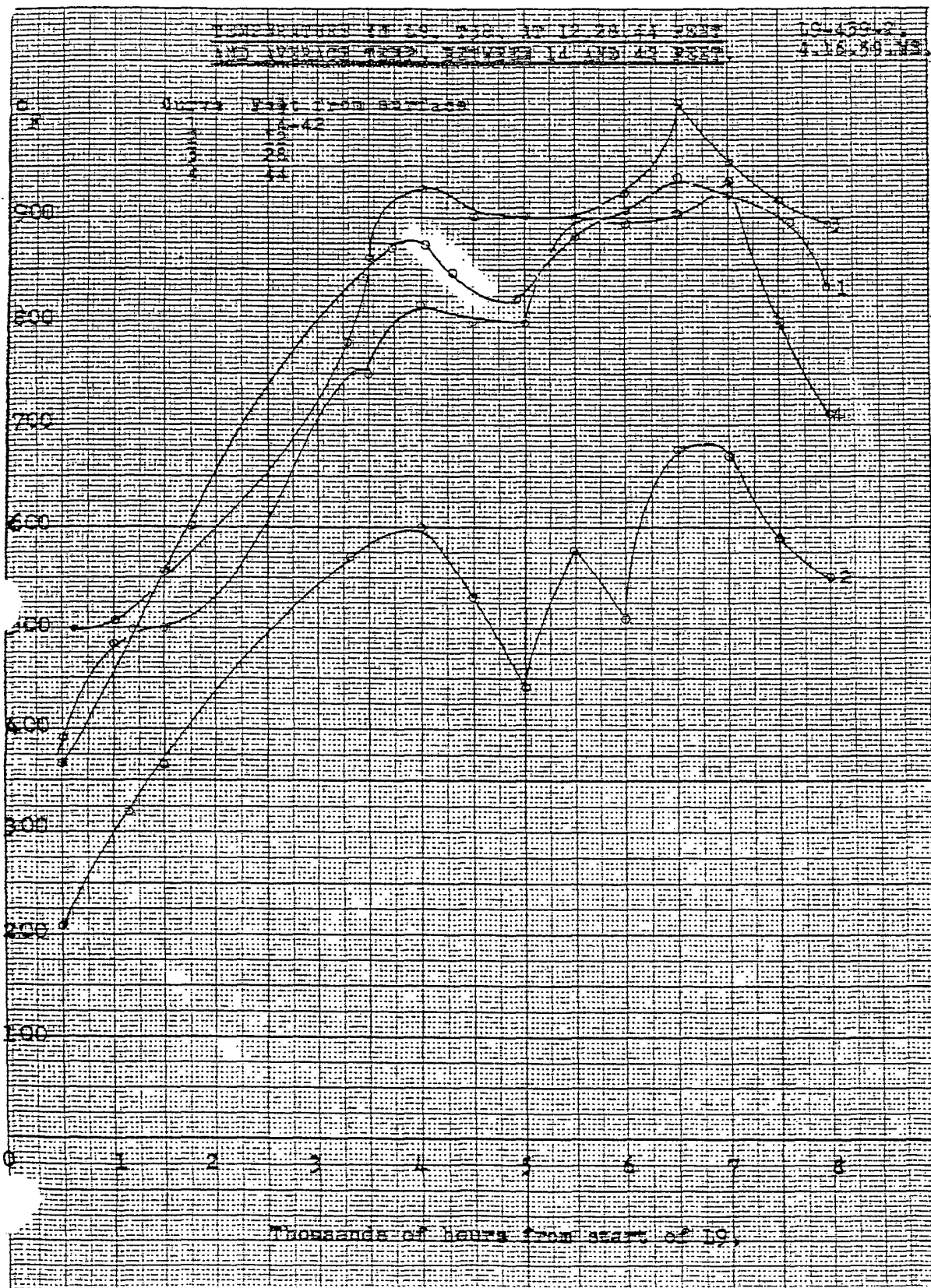


Figure 36

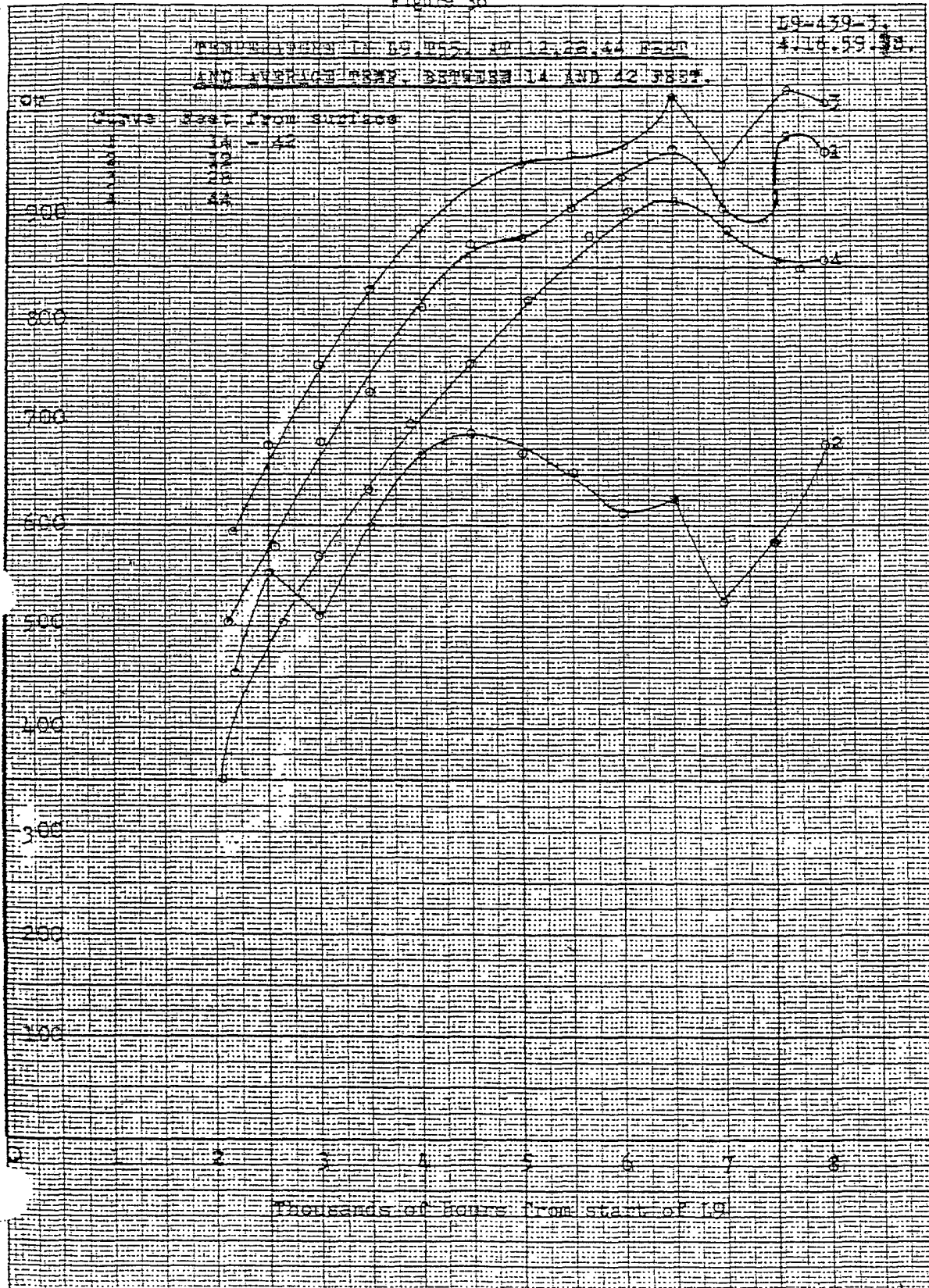


Figure 37

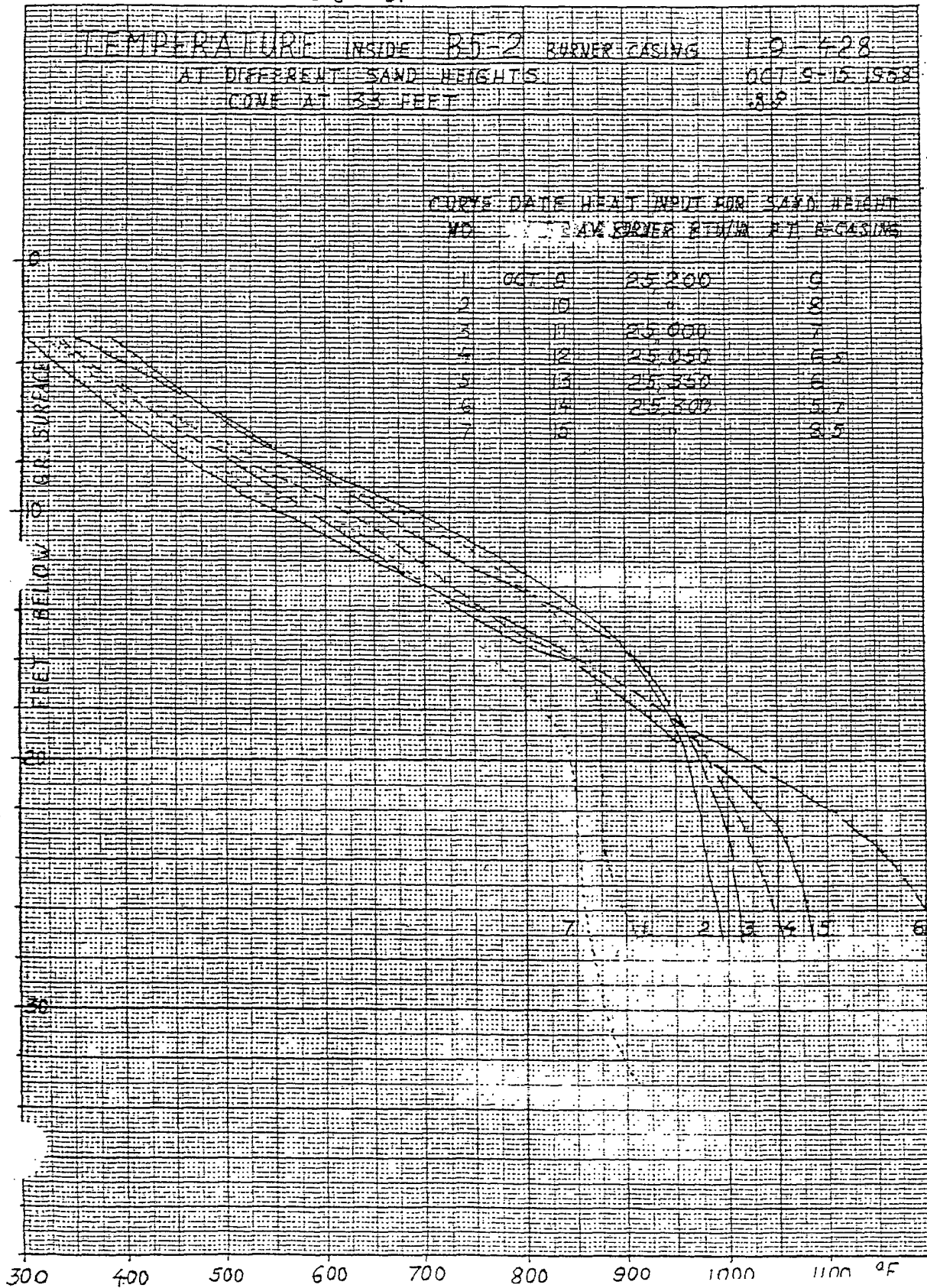


Figure 38

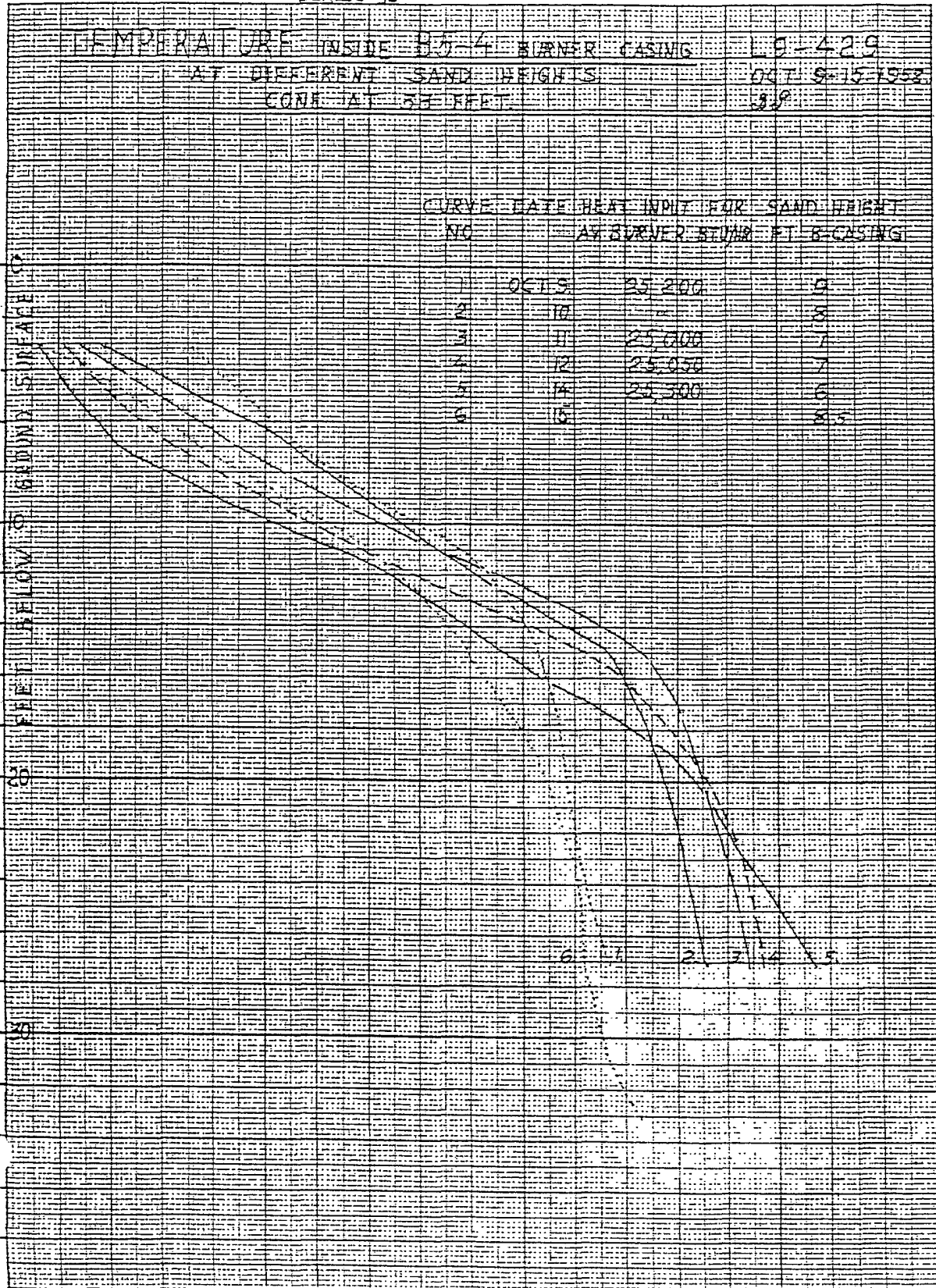


Figure 39

TEMPERATURE OUTSIDE (m3d) AND INSIDE
BURNER CASING 81-5.

10-44-11
1-27-59-MS

| Curve | Burner casing | Hours after start |
|-------|---------------|--------------------------------|
| 1 | Outside | 4090 |
| 2 | * | 6410 |
| 3 | * | 7380 |
| 4 | Inside | 4130 |
| 5 | * | 6430 |
| 6 | * | 7370 |
| 7 | Outside | 2400 hours from start down. |

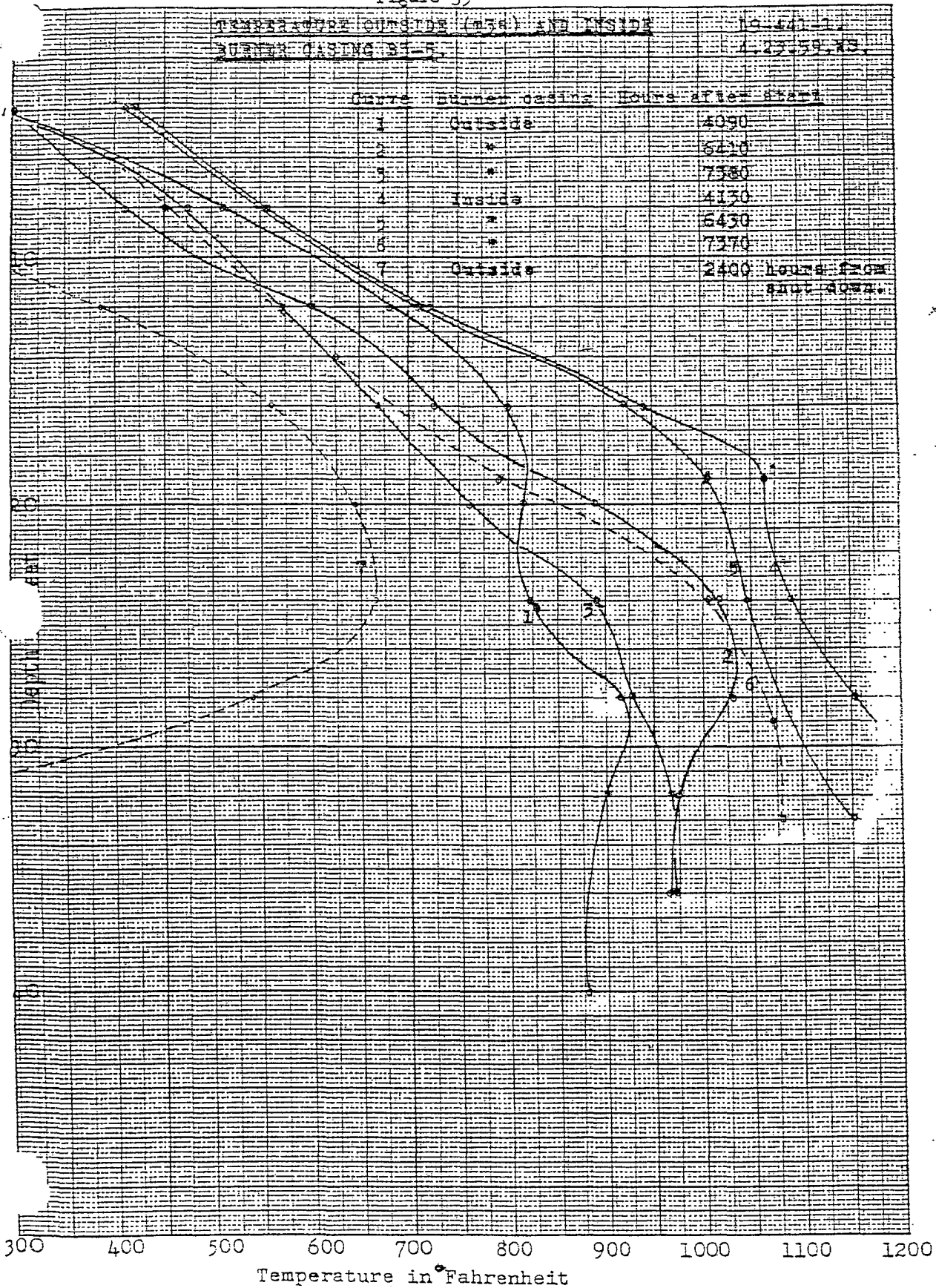


Figure 40

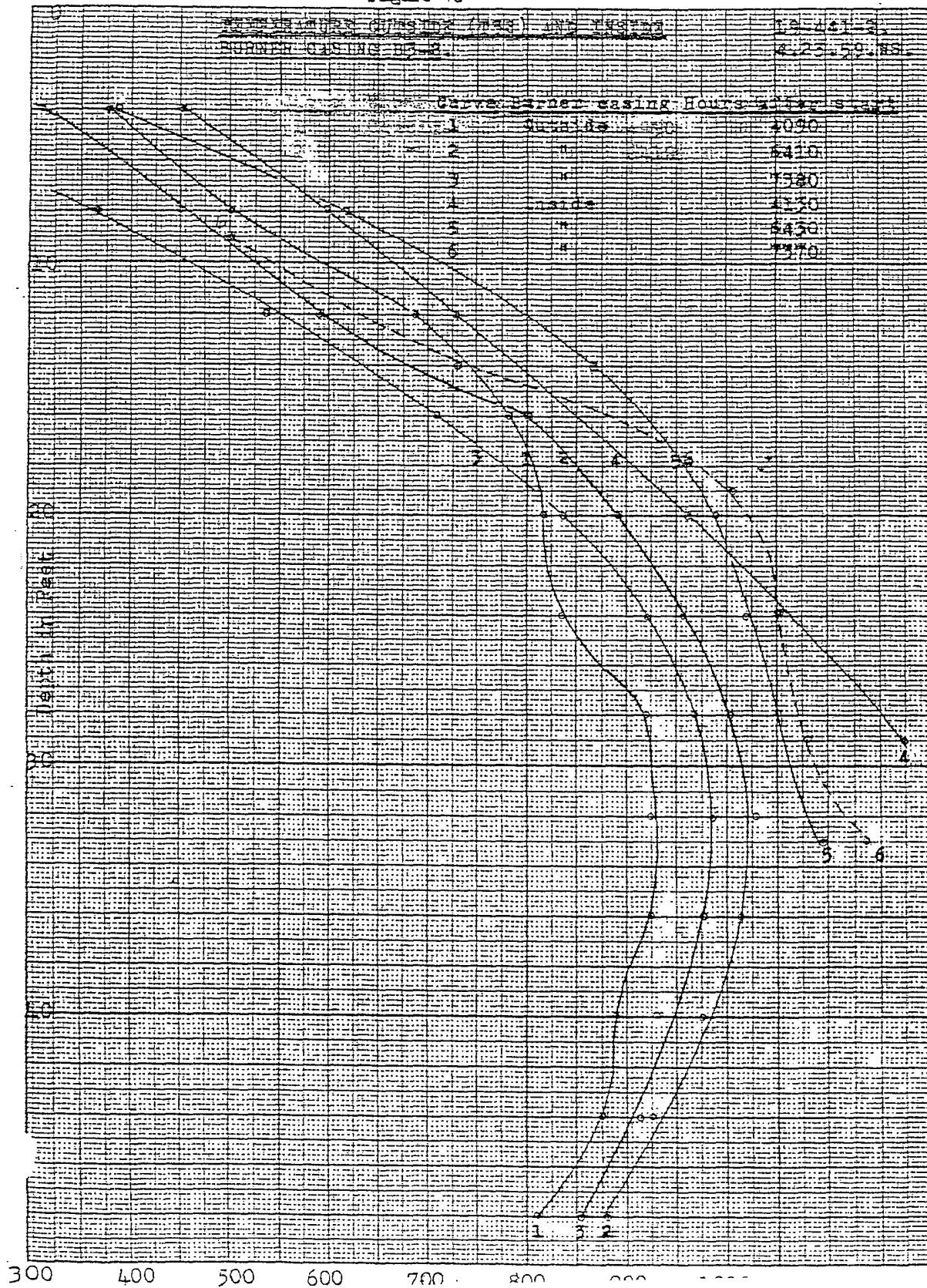


Figure 41

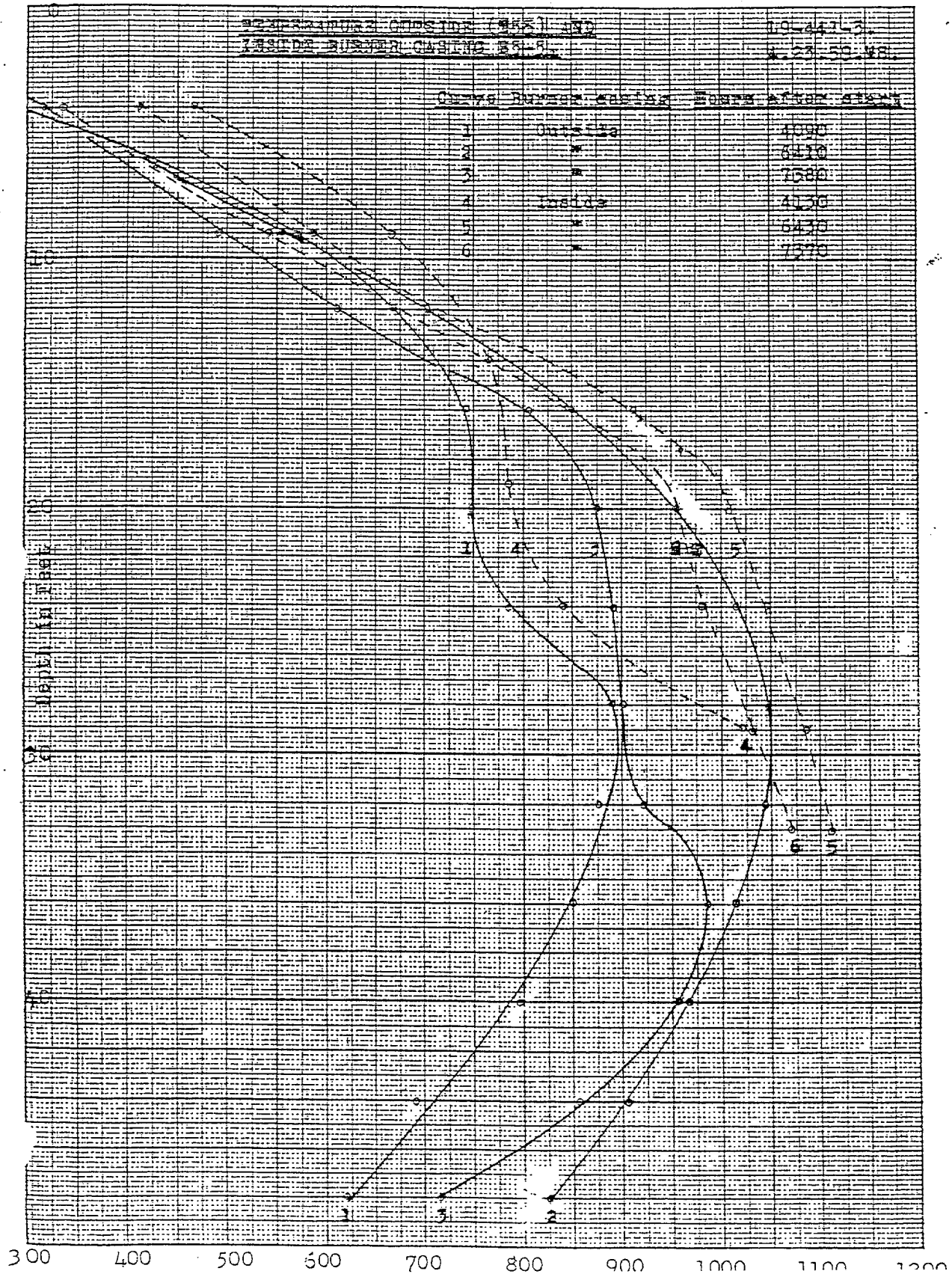


Figure 42

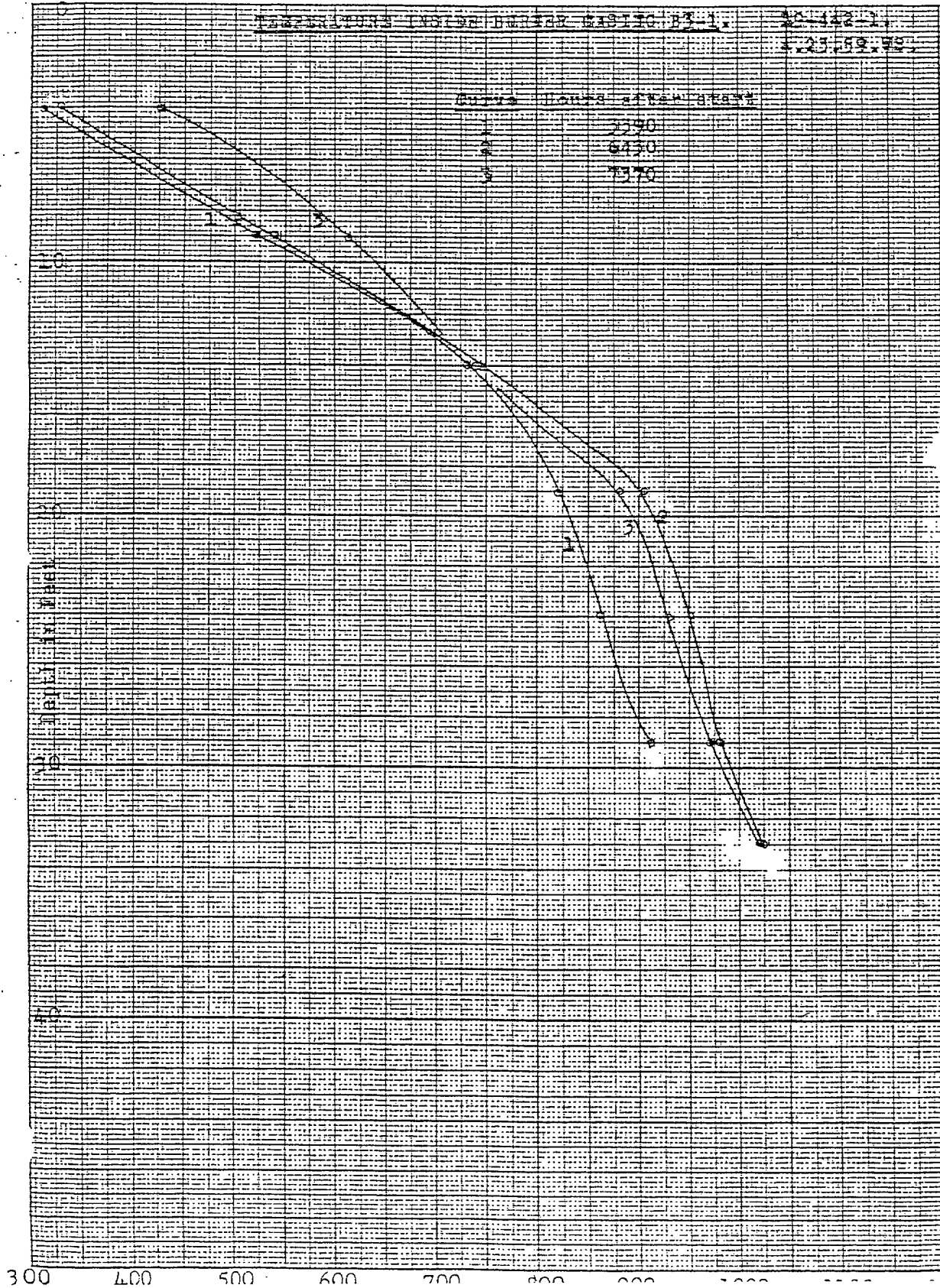


Figure 43

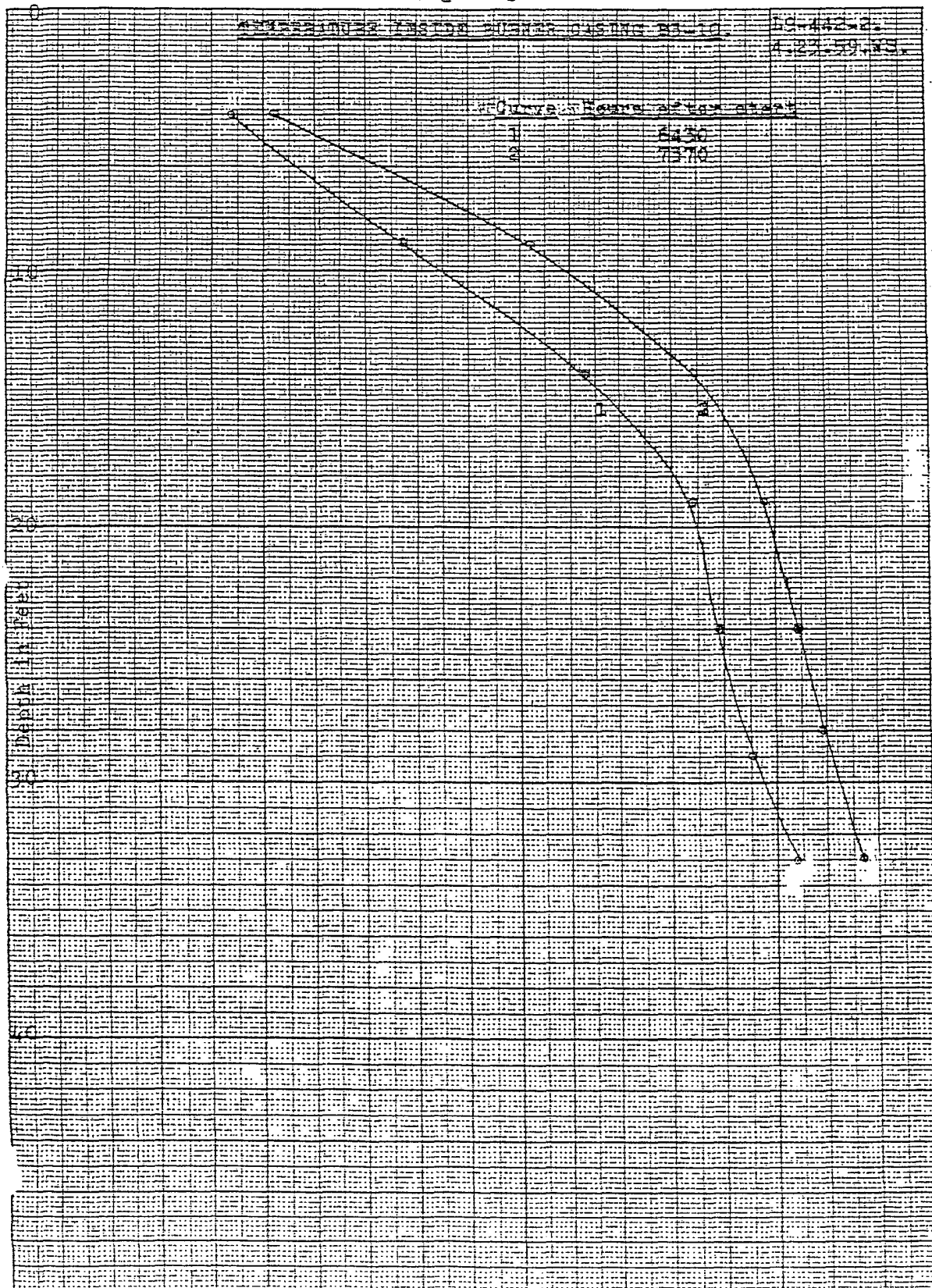


Figure 44

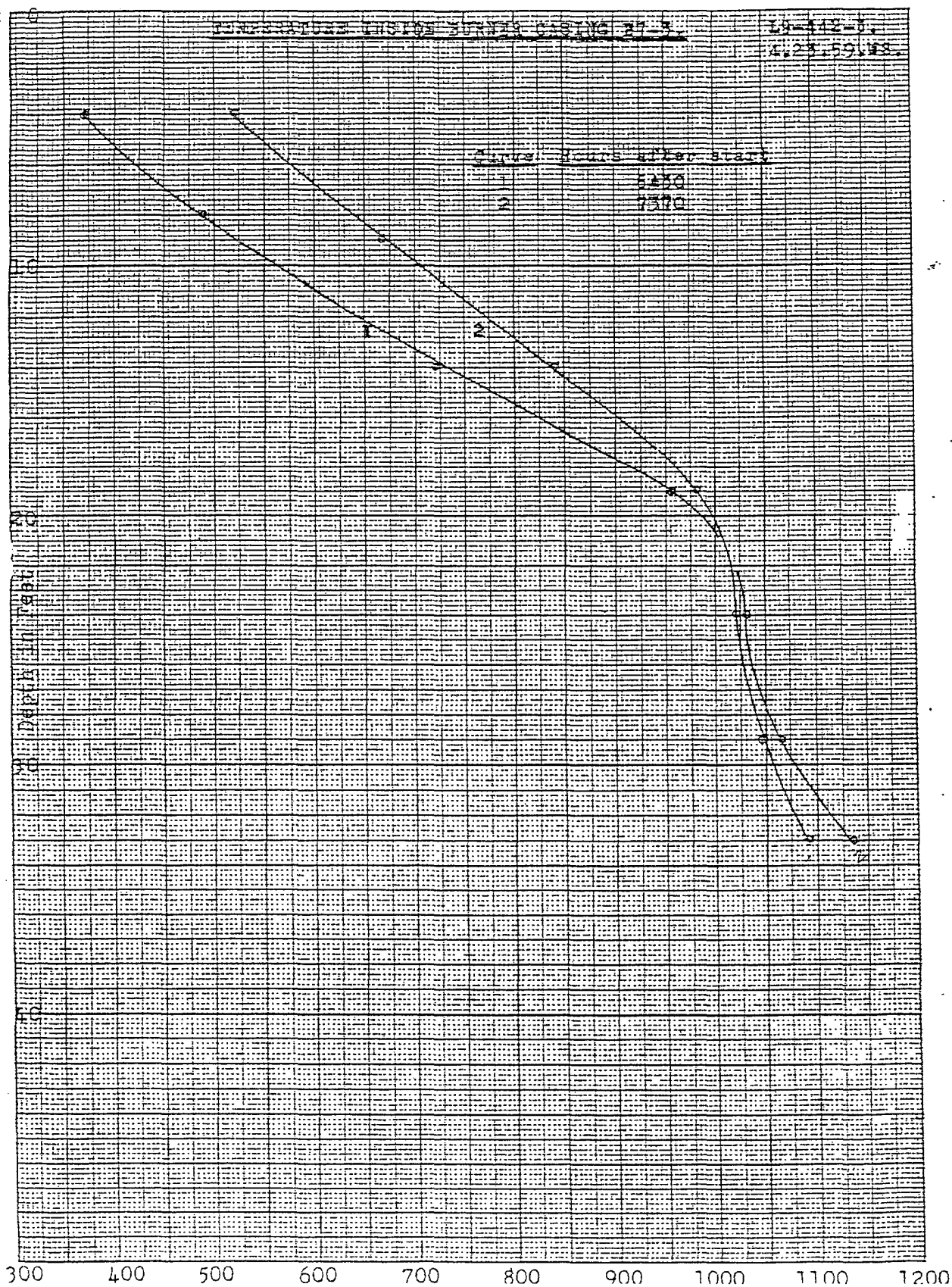


Figure 15

TEMPERATURE INSIDE BURNER CASING BTU/LB

LD 415-4.
1.25 58, 85.

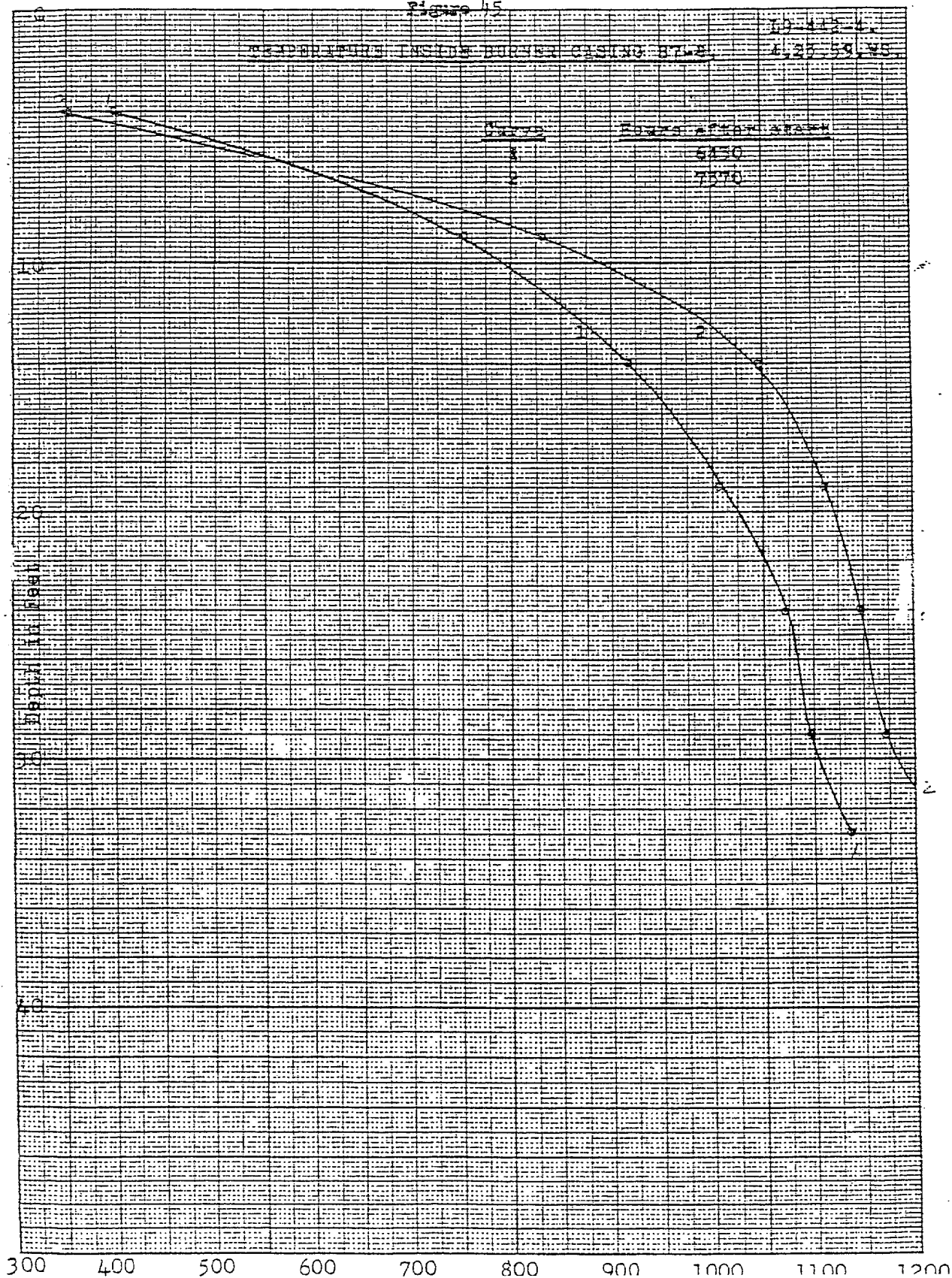


Figure 16

6-442-3

EXHAUSTION TESTS DURING NO. 1

1-27-50 MS.

DATA POINTS AFTER START

| | |
|---|------|
| 1 | 6450 |
| 2 | 7370 |

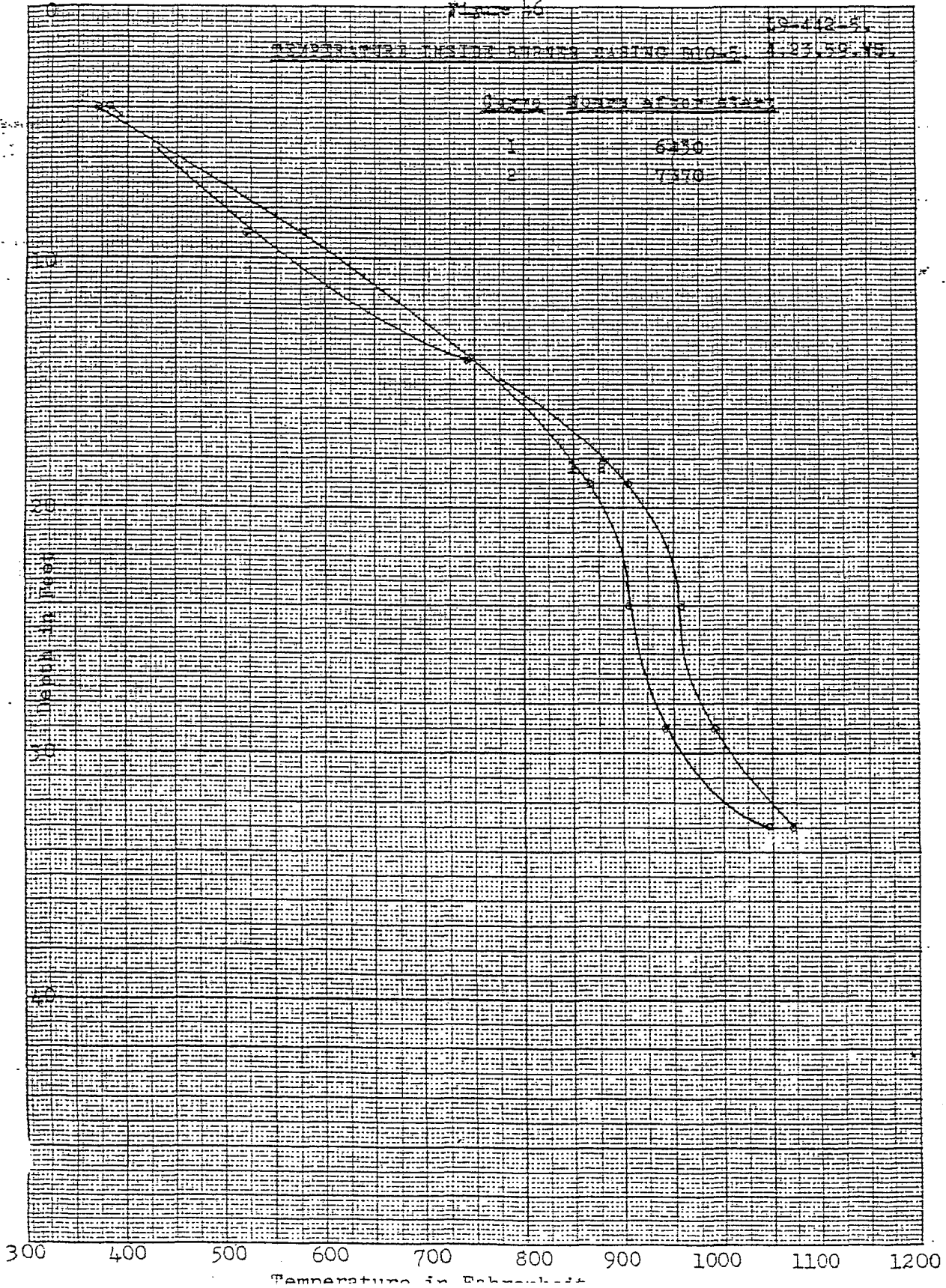


Figure 47

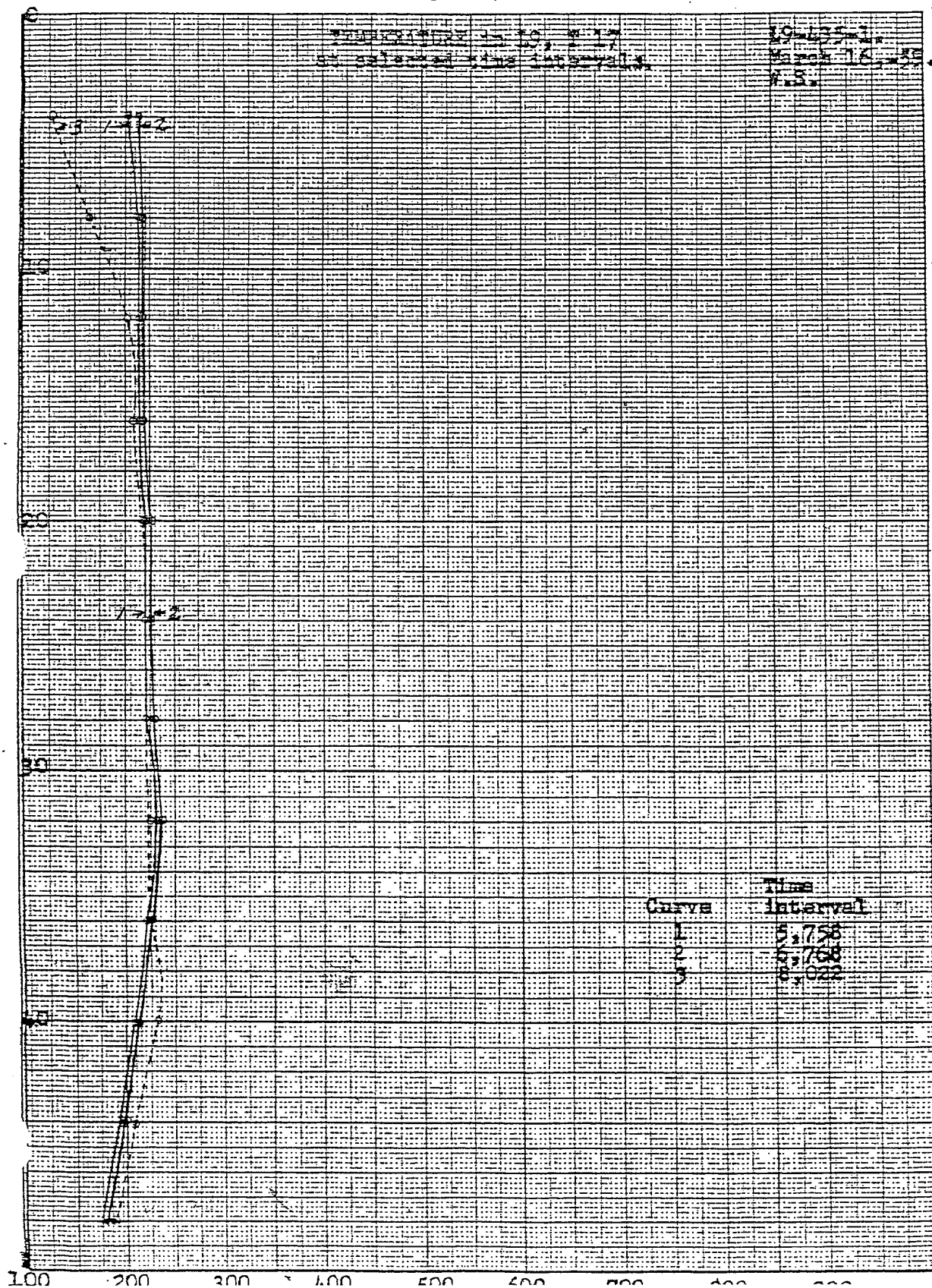


Figure 48

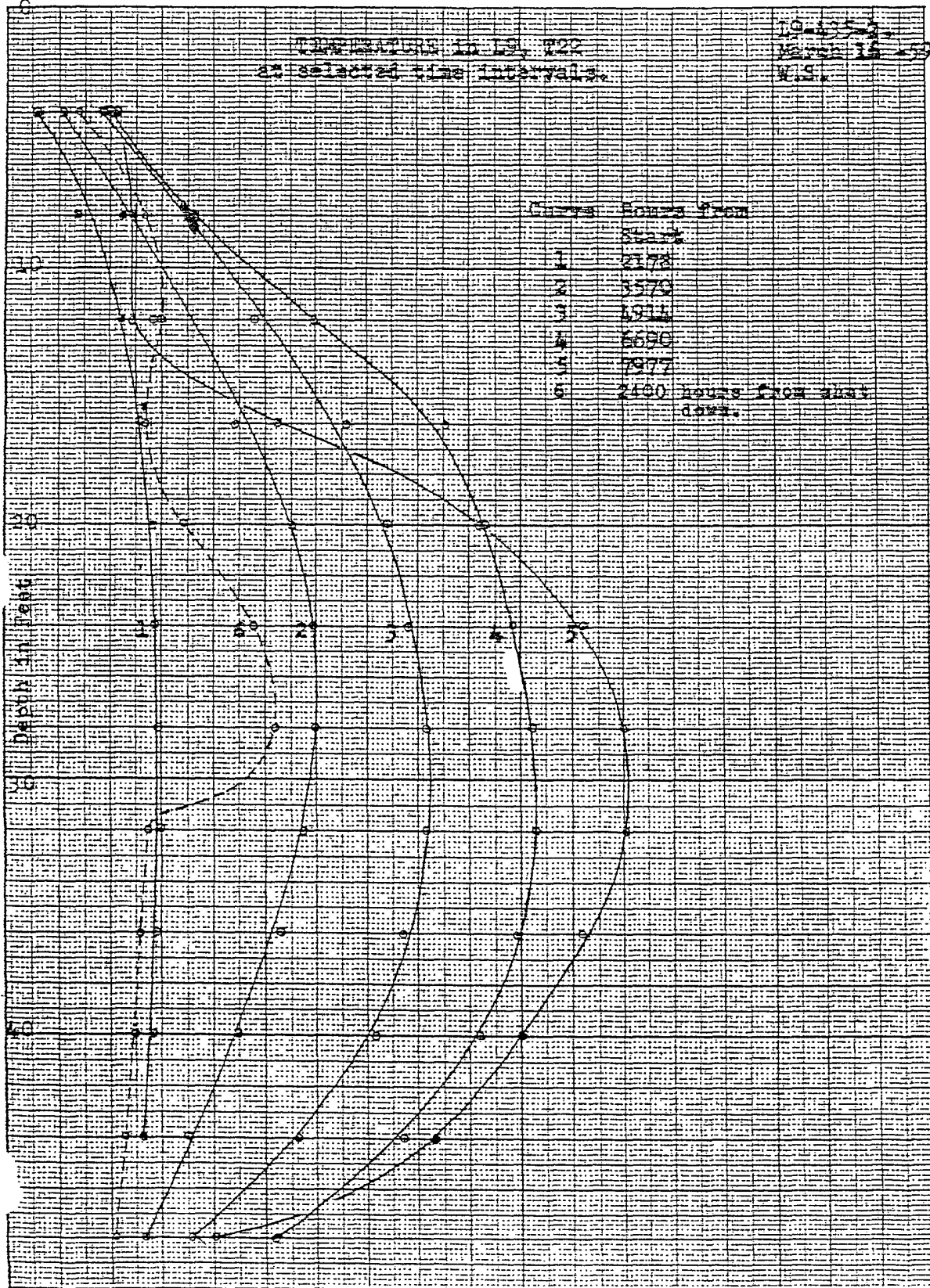


Figure 10

TEMPERATURES IN IS, 321
at selected time intervals.

IC-435-3
March 14, 57
W.S.

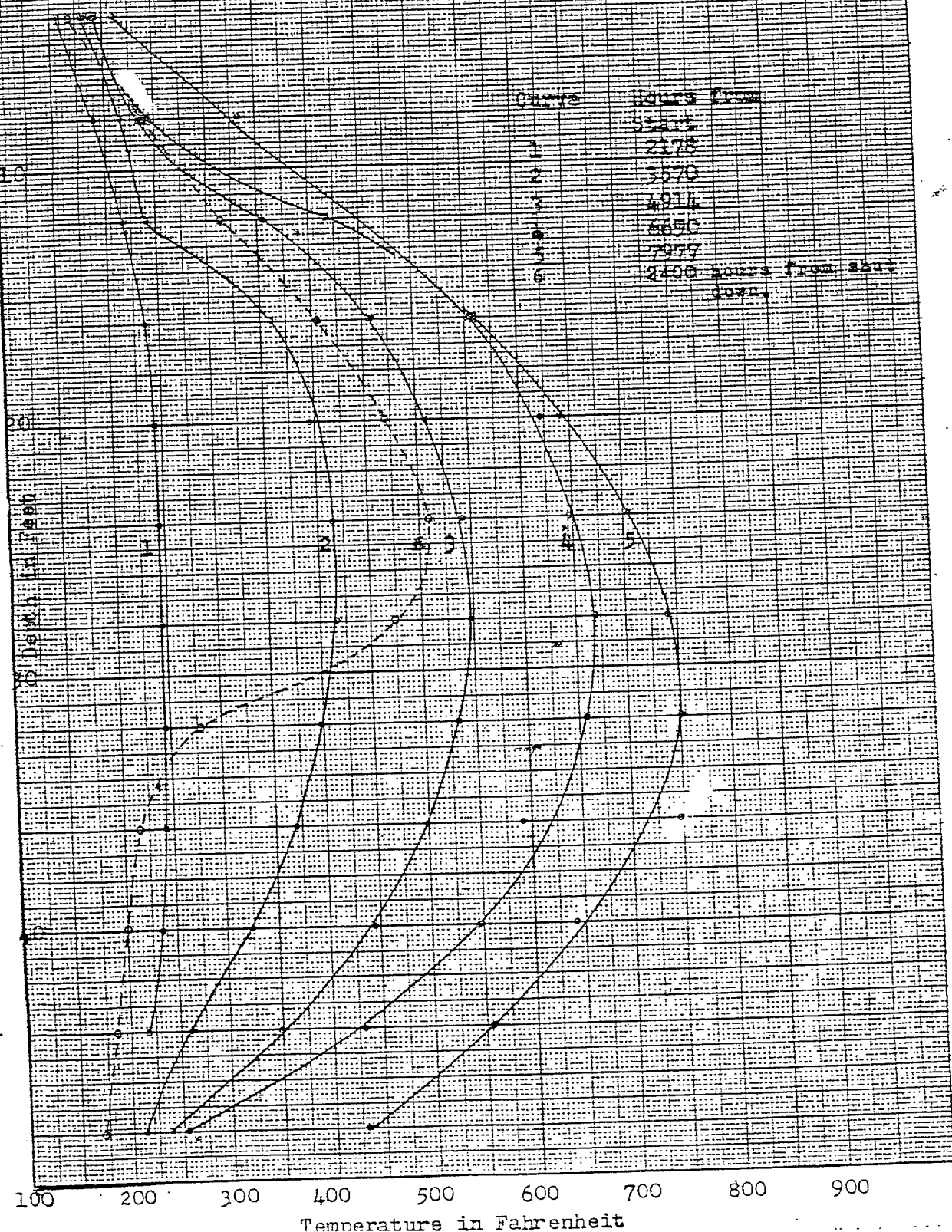
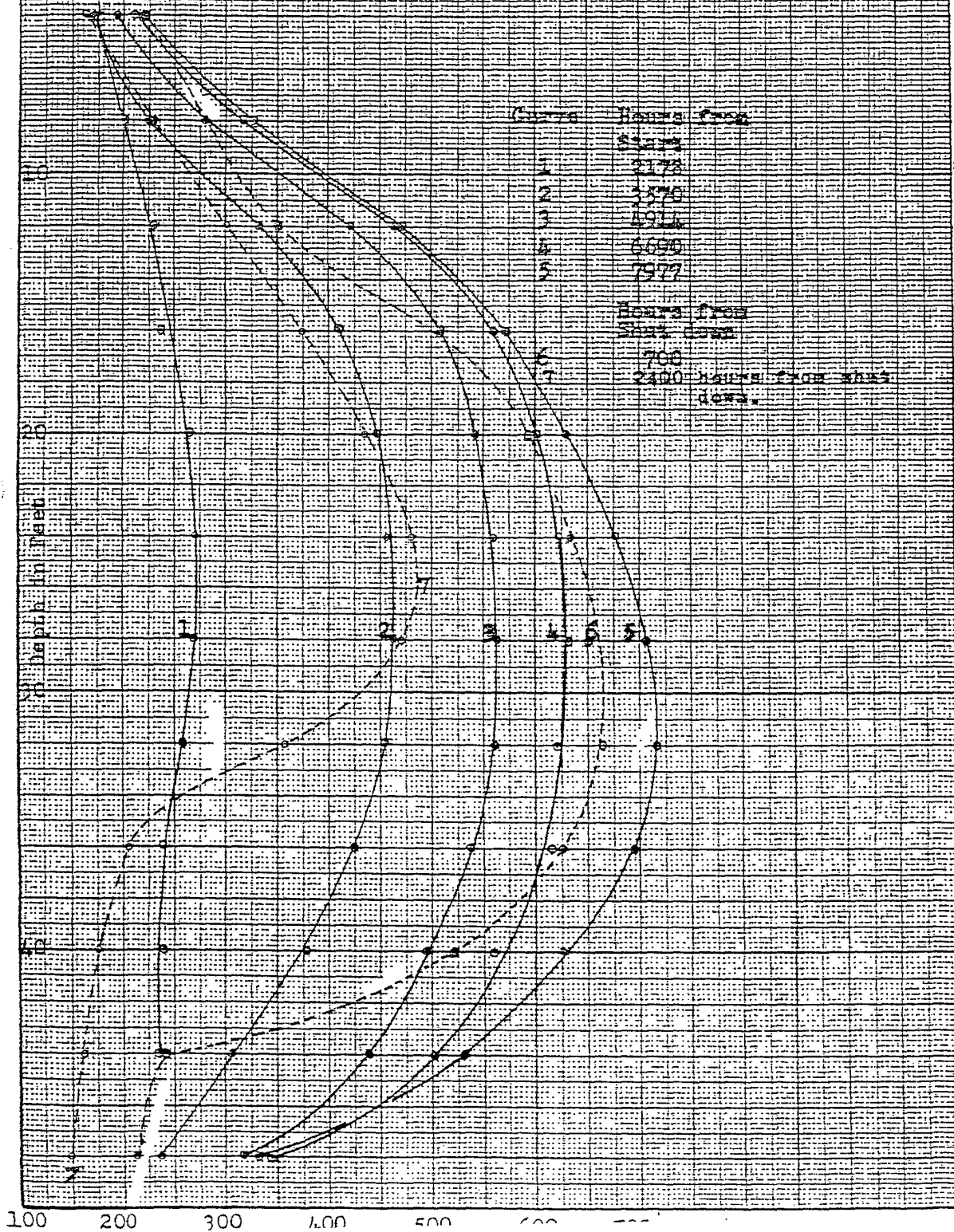


Figure 50

TEMPERATURE IN 18, 728
at selected time intervals.

10-435-
March 18, 1950
V.S.



TEMPERATURE in $^{\circ}\text{F}$
at selected time intervals.

10-35-53
March 16, 53
U.S.

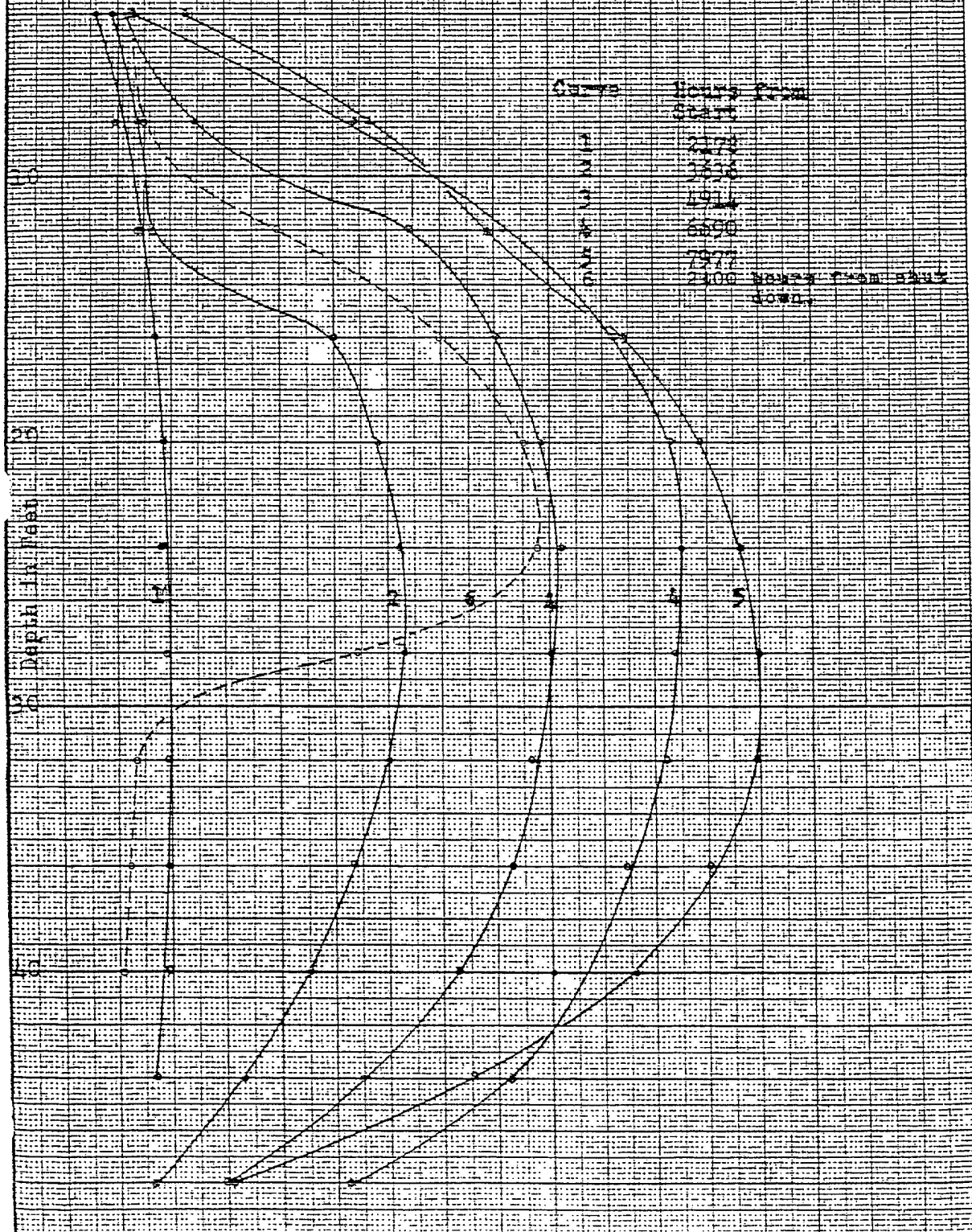
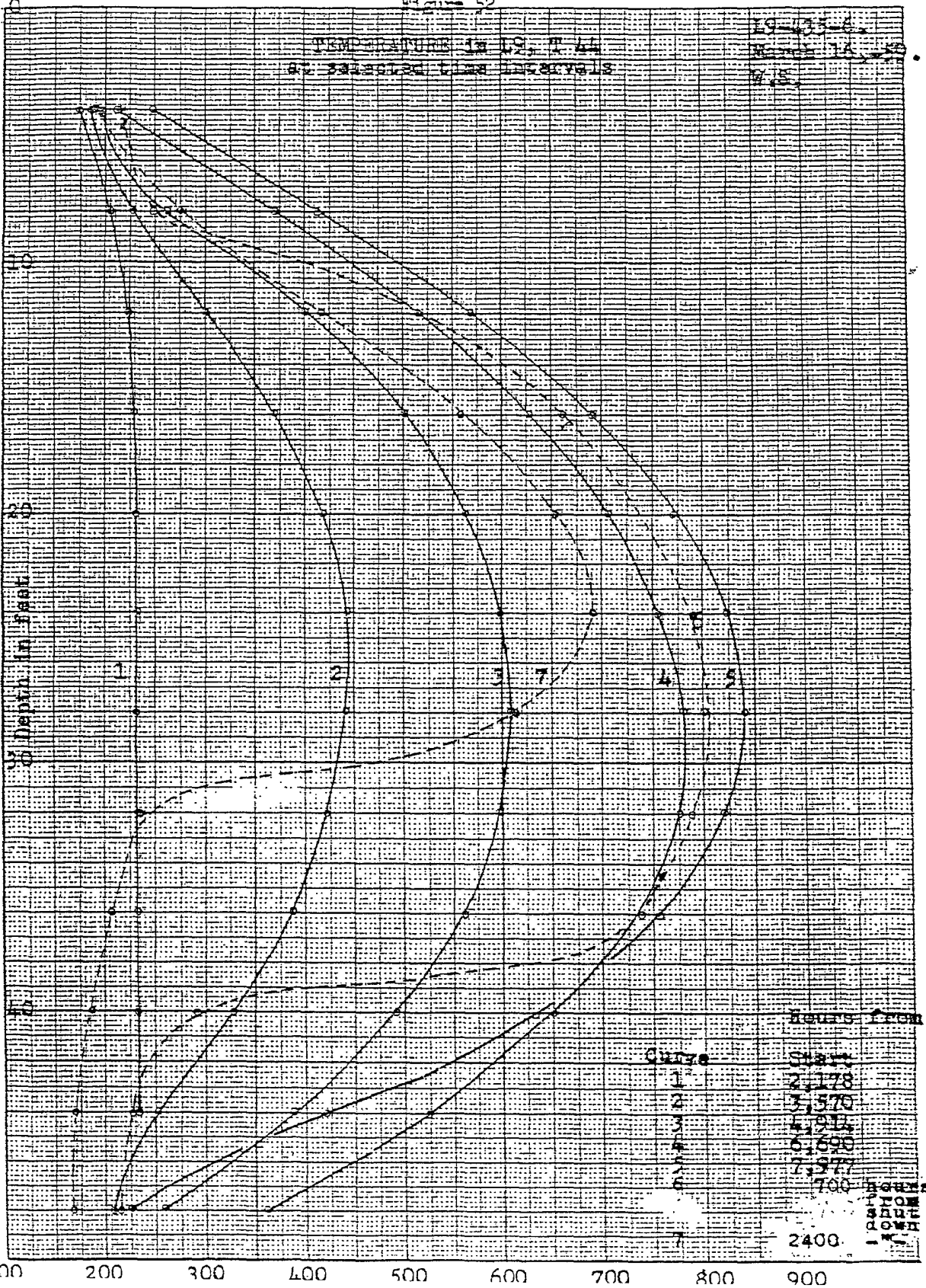


Figure 52

TEMPERATURE in L.S. T 44
at selected time intervals

19-433-6.
March 14, 1950
W.S.



PRINTED IN U. S. A.

MILLIMETER

Figure 53

TEMPERATURE IN 10' SLB
at selected time intervals.

10-535-7.
March 18, 54
U.S.

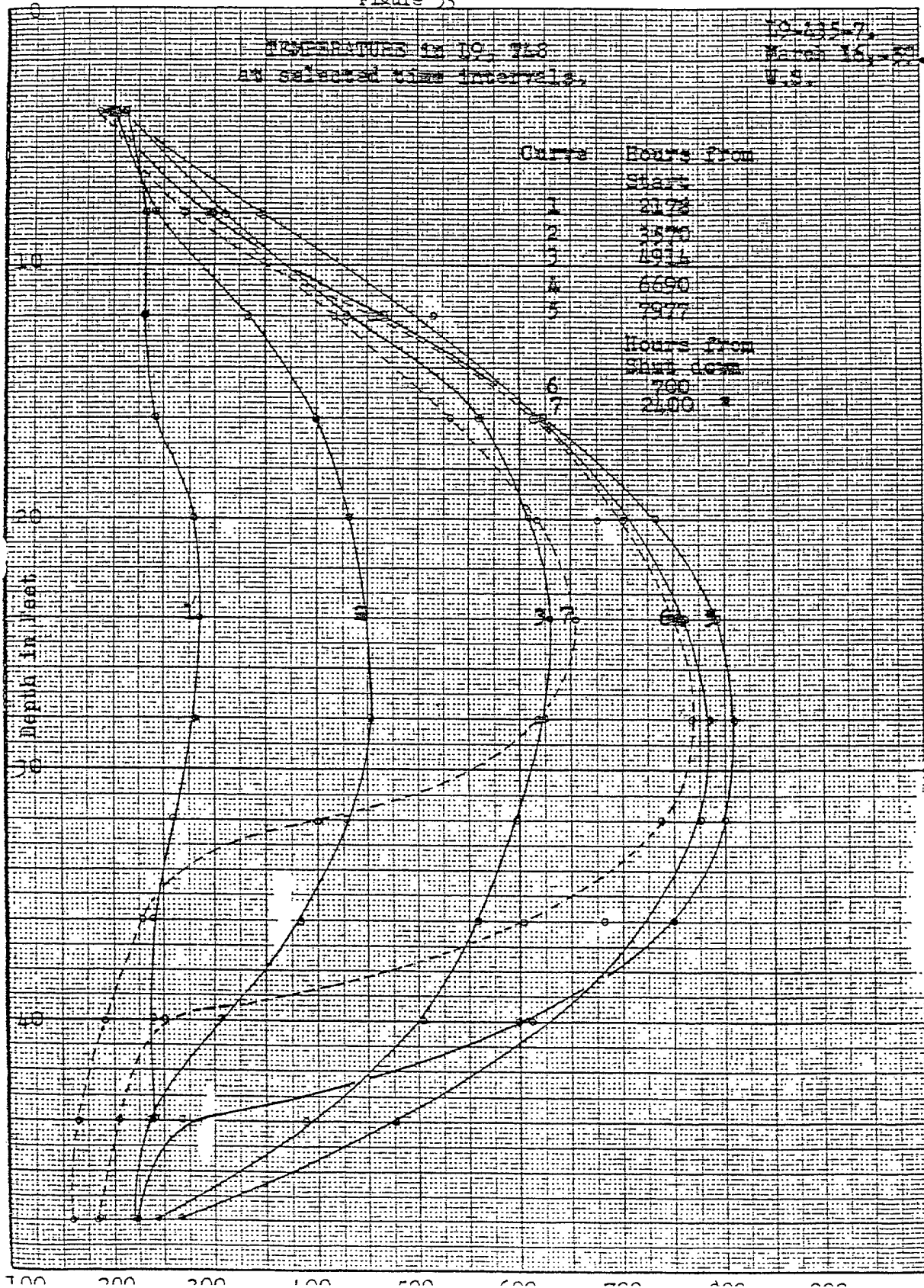


Figure 1
TEMPERATURE in 18, 7299
at selected time intervals.

19-433-4
March 16, -52
W.S.

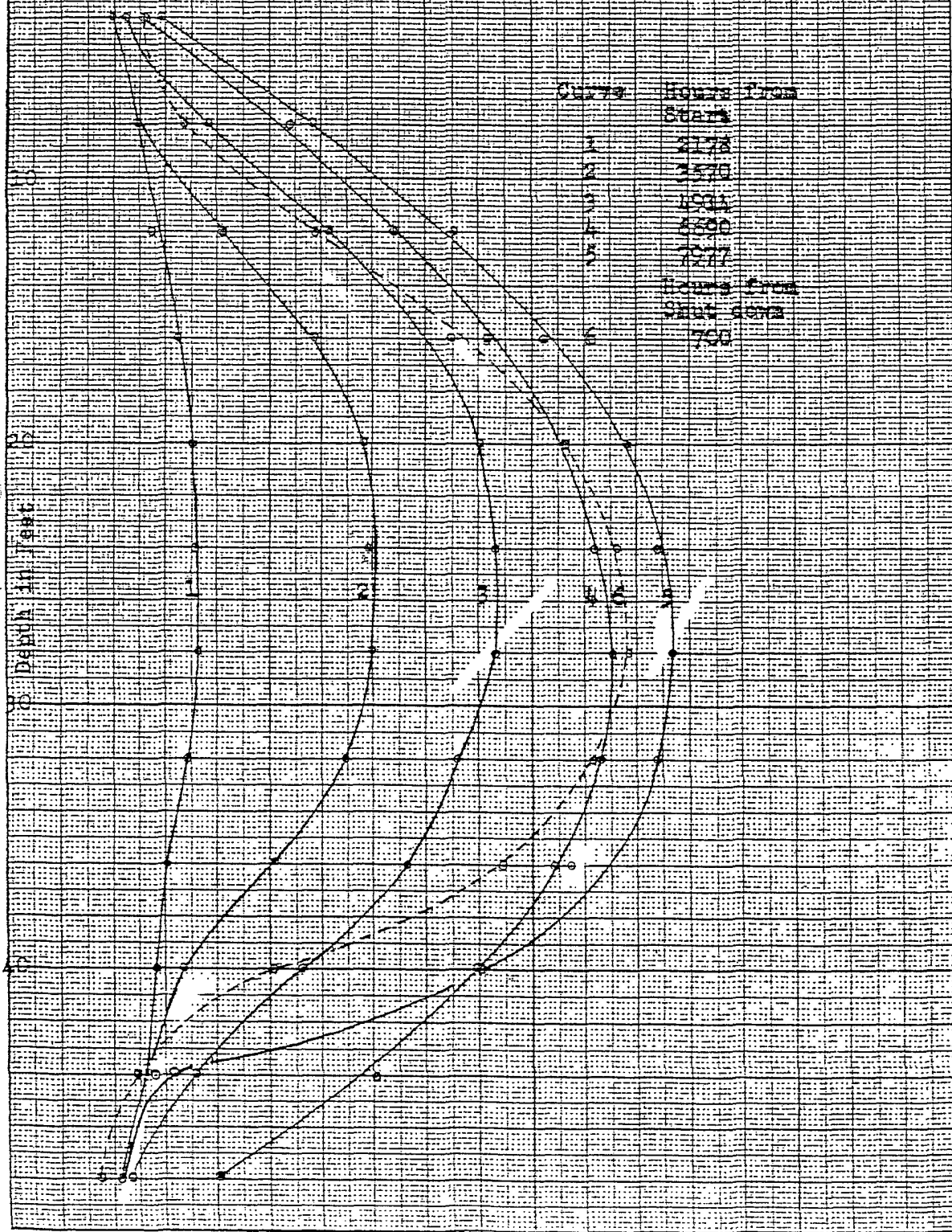


Figure 55

TEMPERATURE IN 10, 20, 30
at selected time intervals.

19-013-9.
March 16, 30.
W.S.

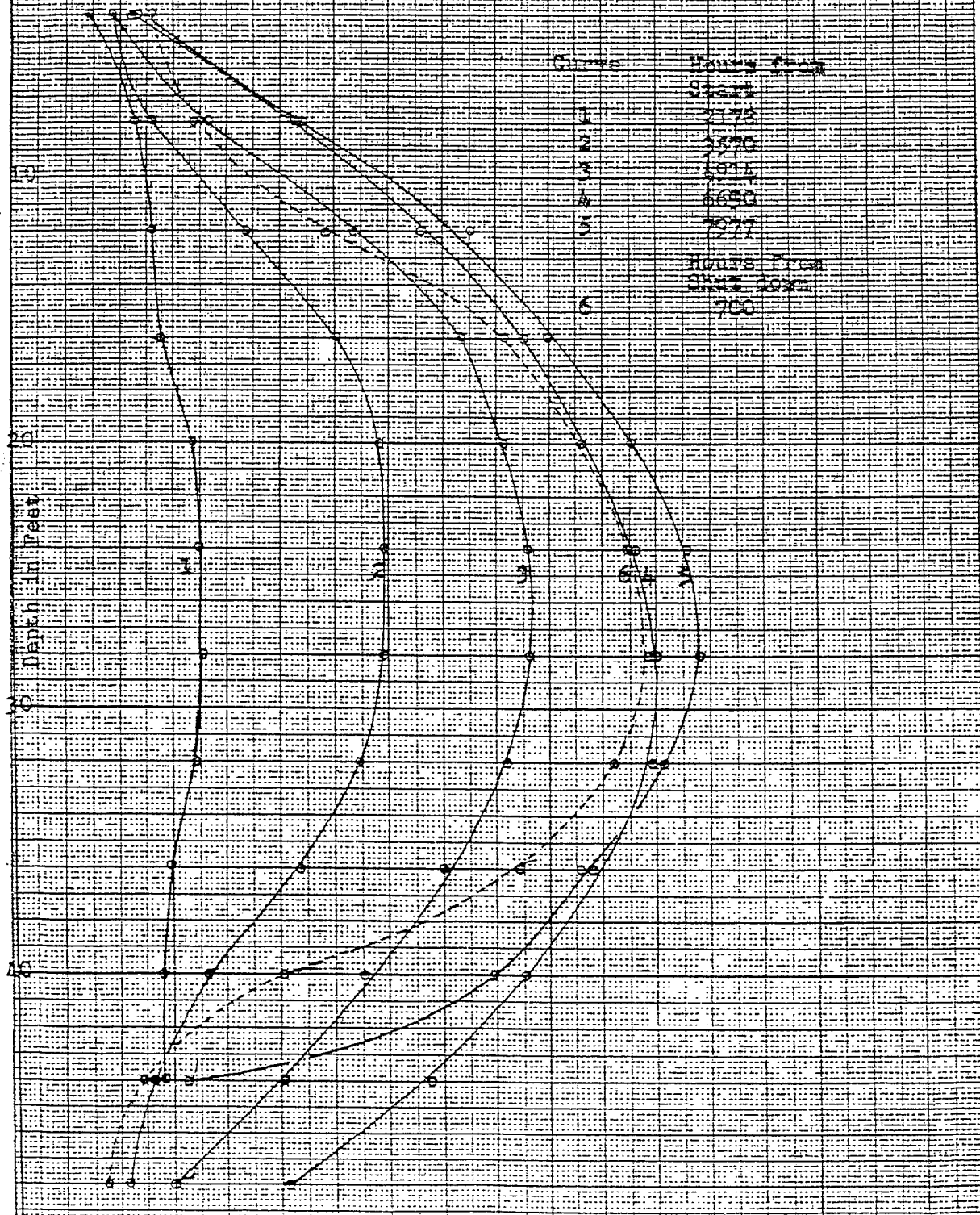
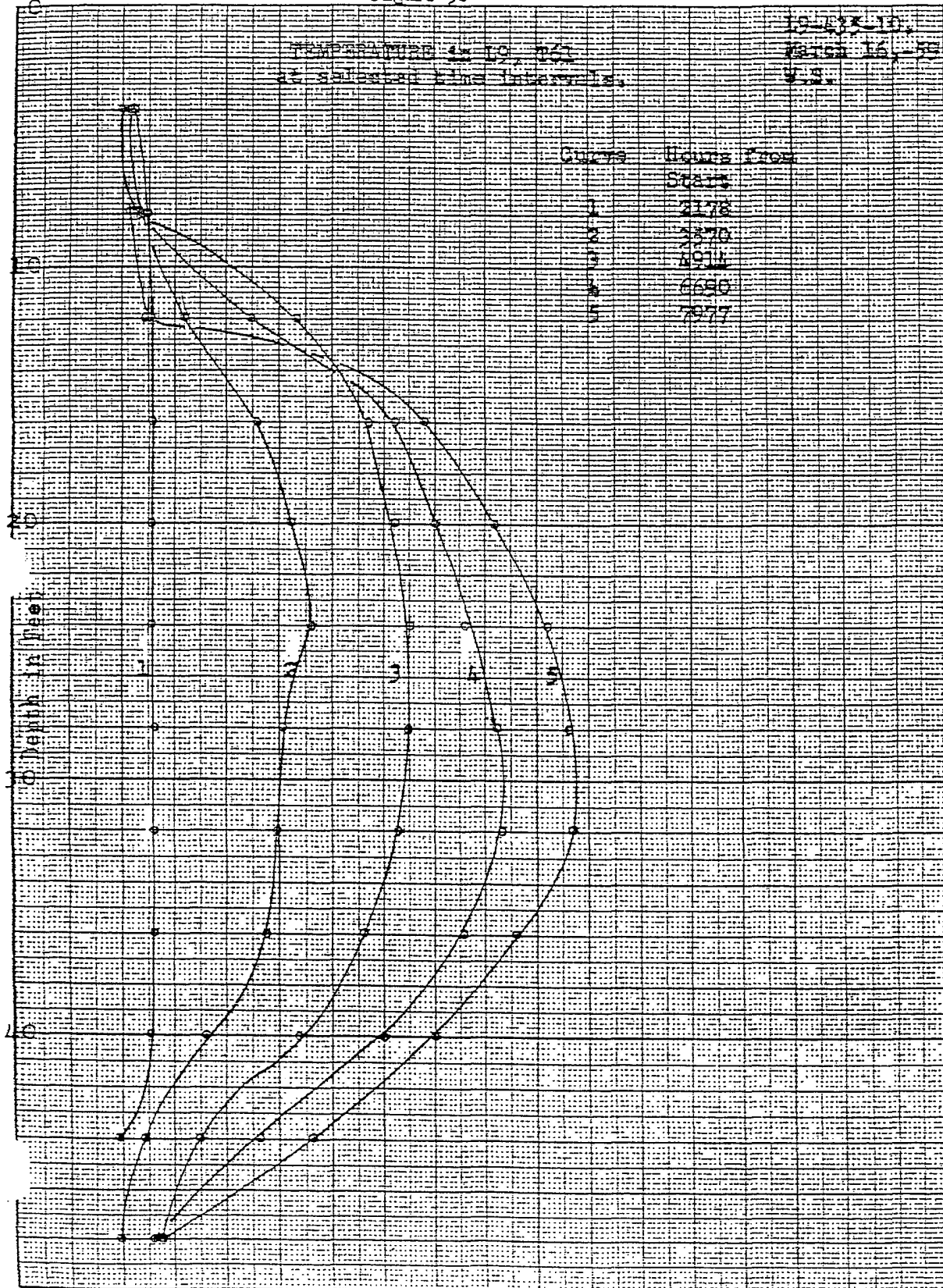


Figure 56



EUGENE DIETZEN CO.
PRINTED IN U. S. A.

NO. 340-A M. DIETZEN GRAPH PAI
MILLIMETER

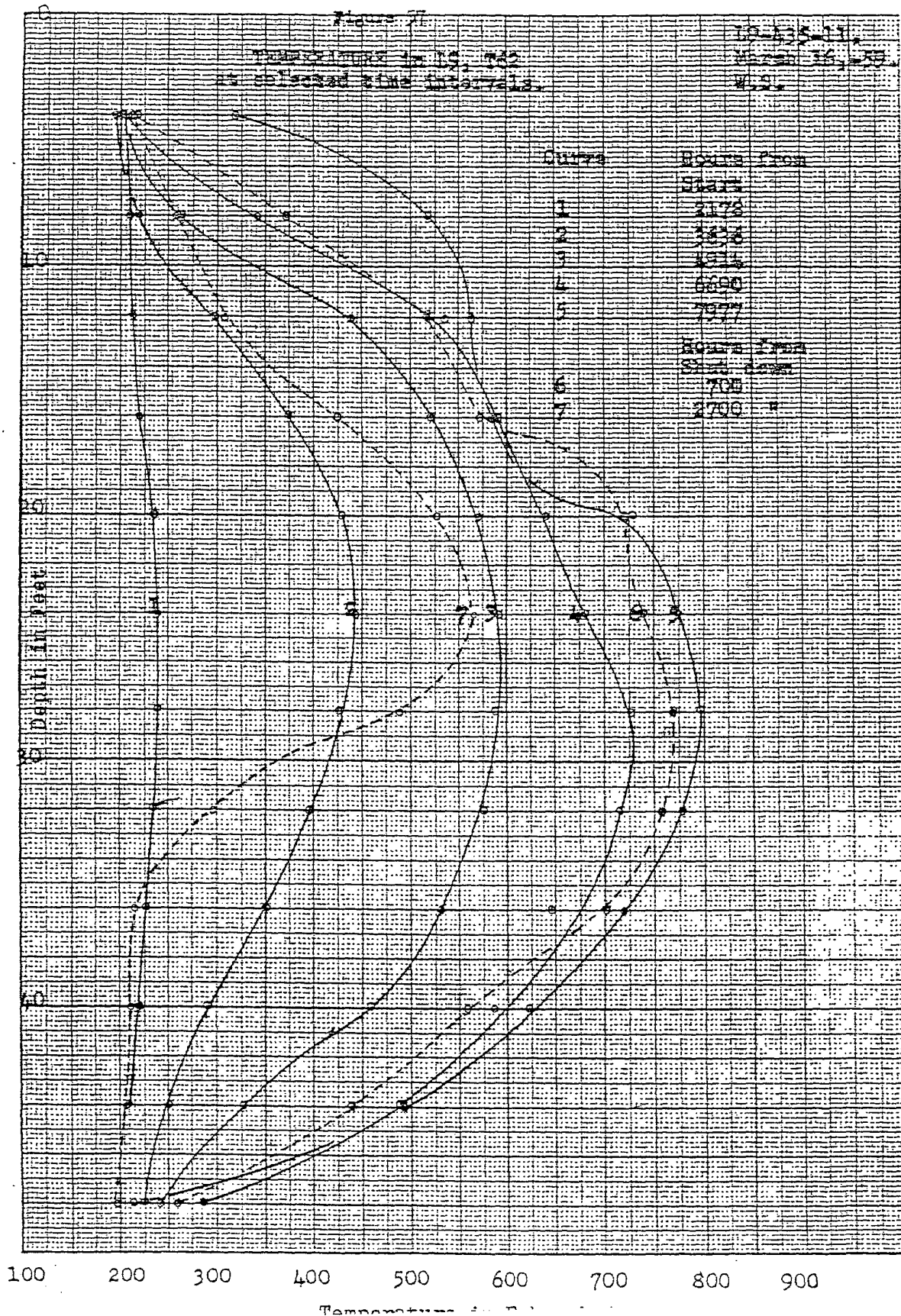


Figure 58

TEMPERATURE IN °C, °F
at selected time intervals.

10-405-12
March 14, 55
U.S.

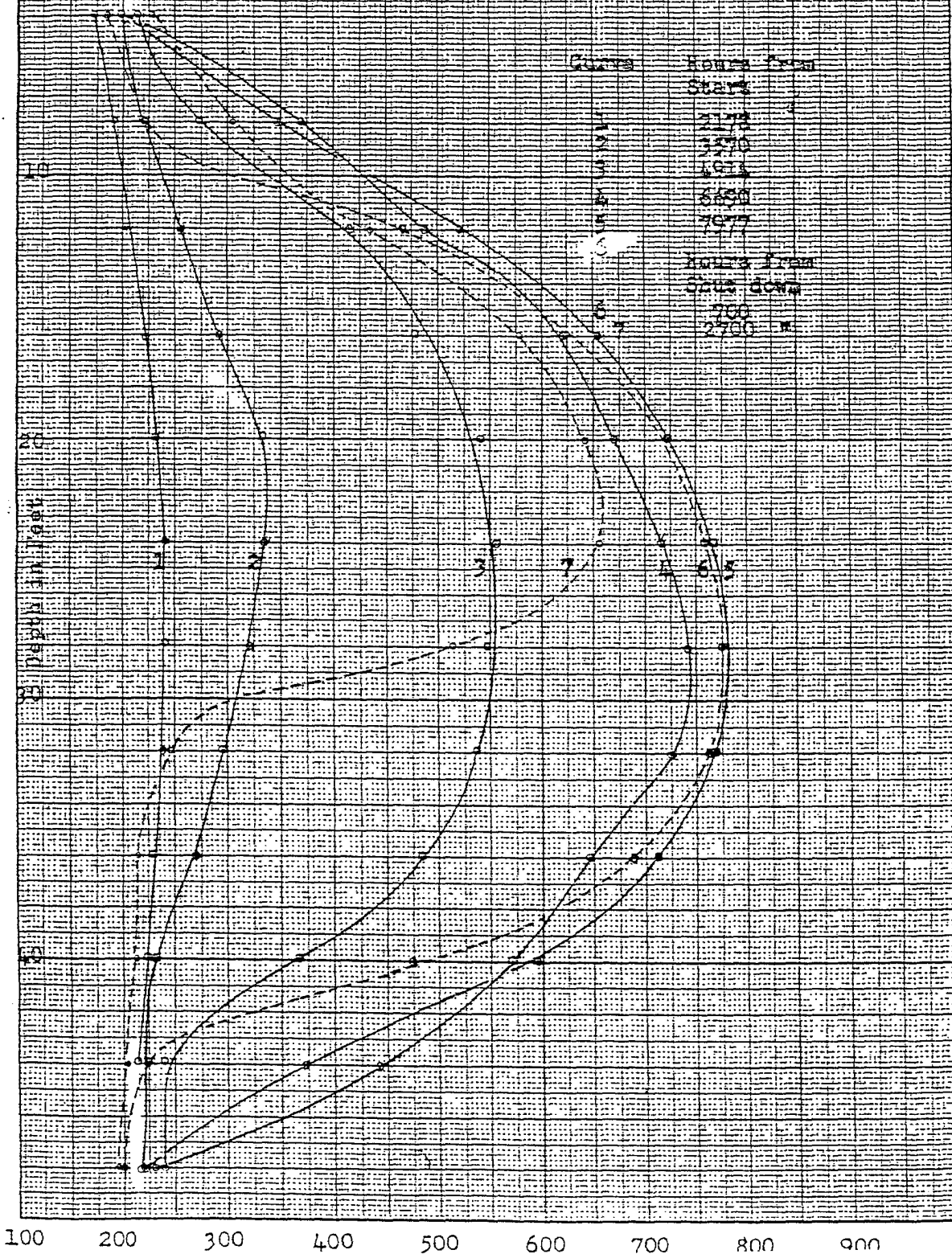


Figure 59

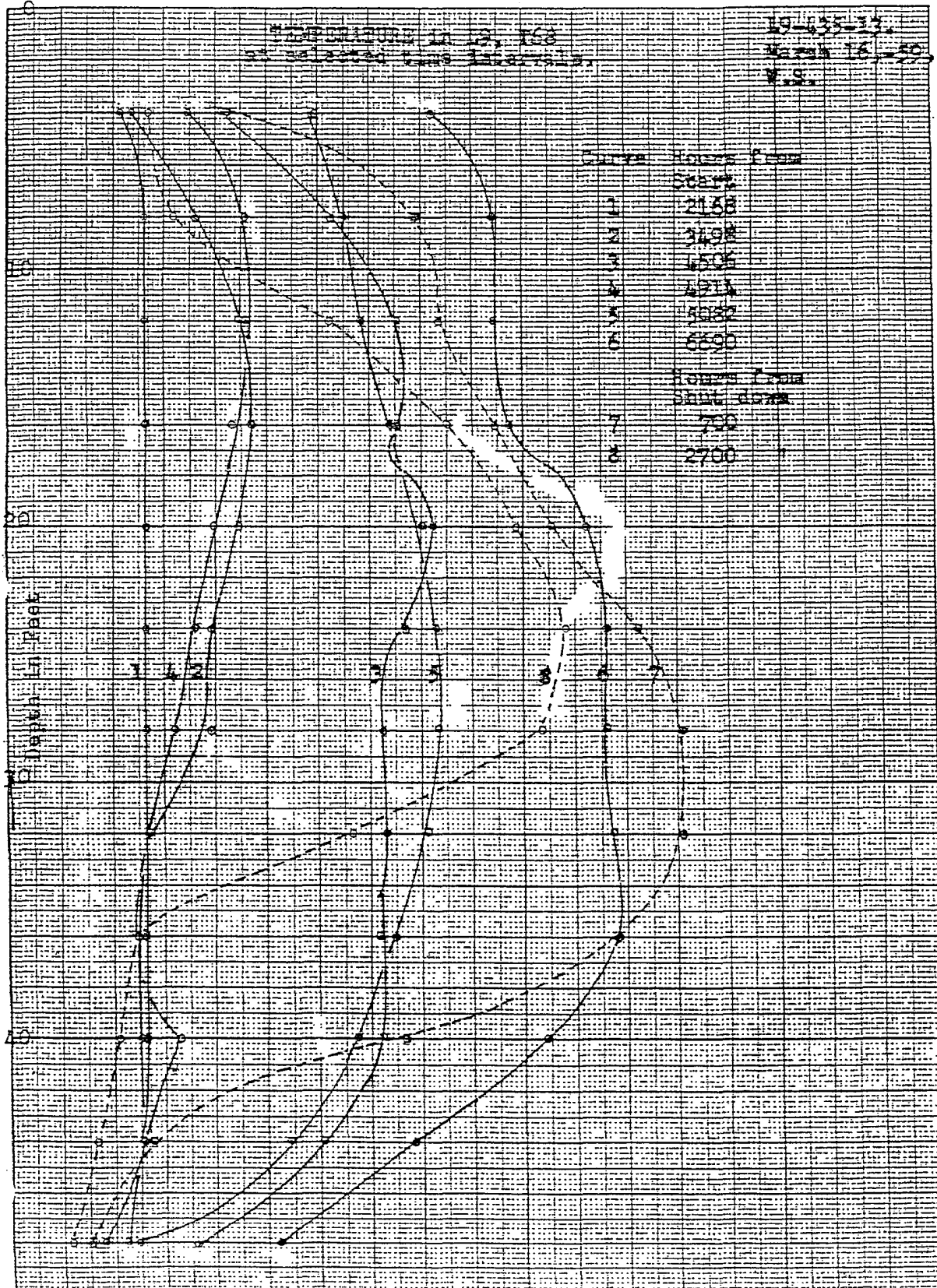


Figure 60

TEMPERATURE IN 19. T71
at selected time intervals.

CG-435-1A.
March 16, 39.
W.S.

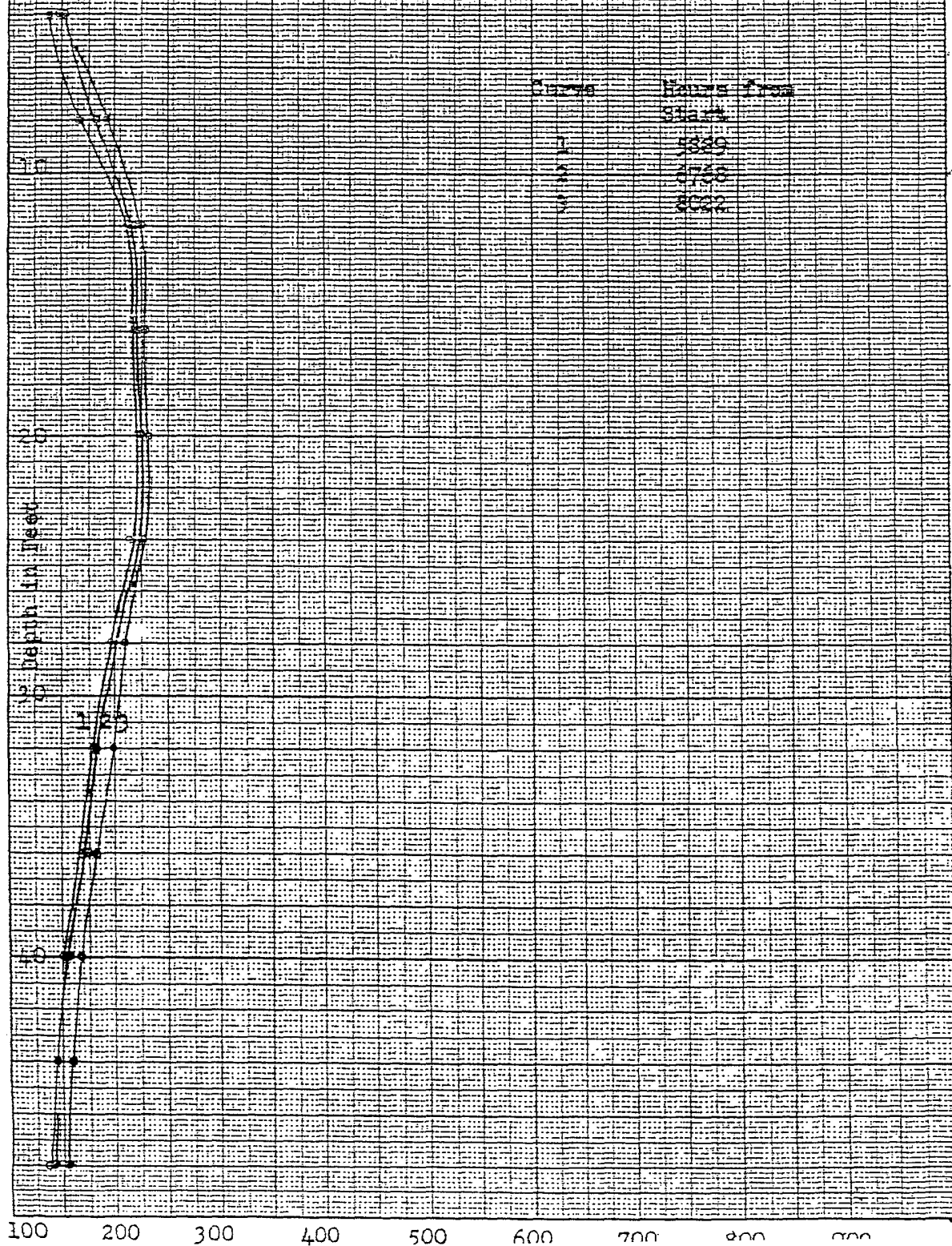


Figure 61

TEMPERATURE IN $^{\circ}\text{F}$, F10A
at selected time intervals

10-105-13
March 16, 1955
U.S.

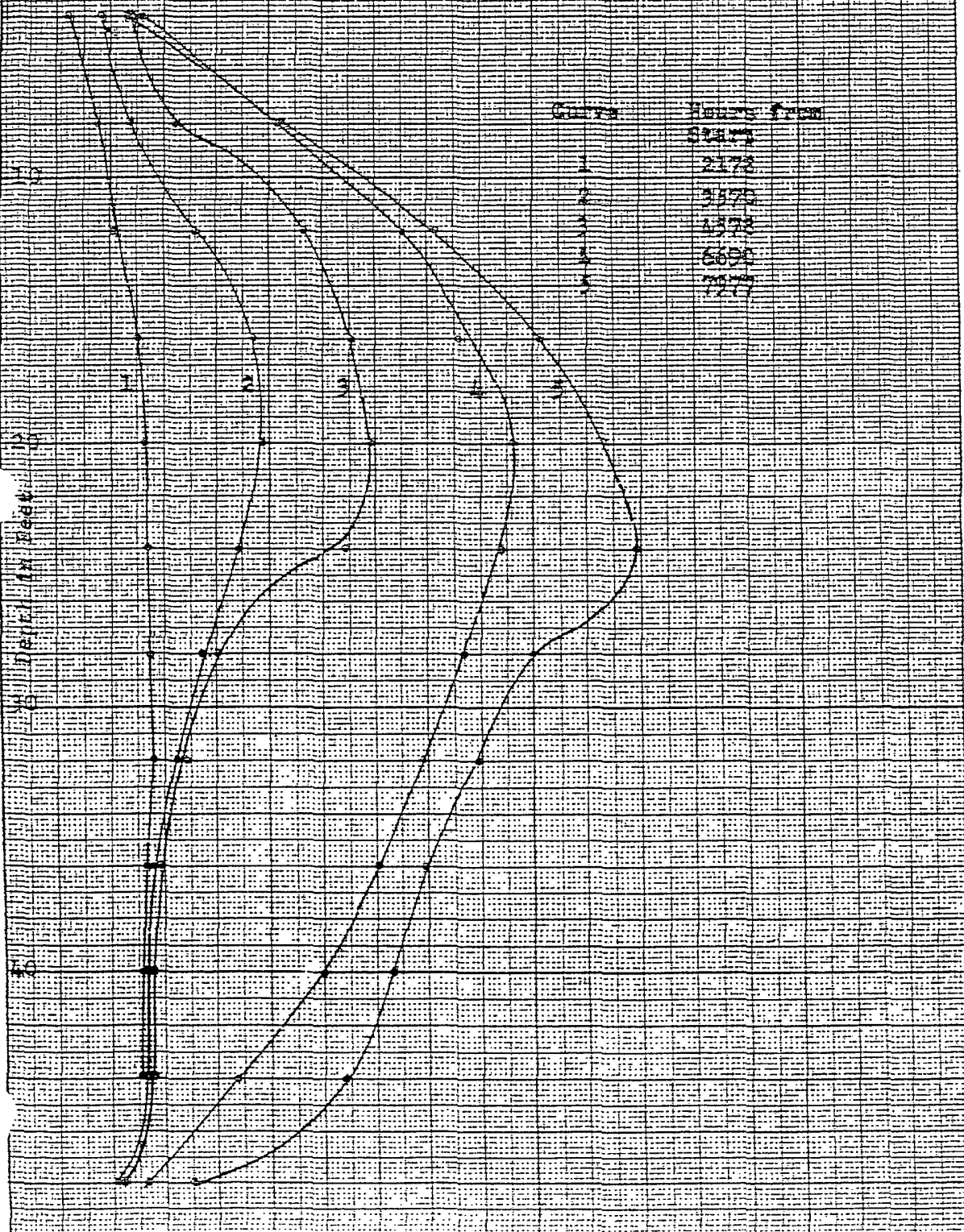


Figure 62

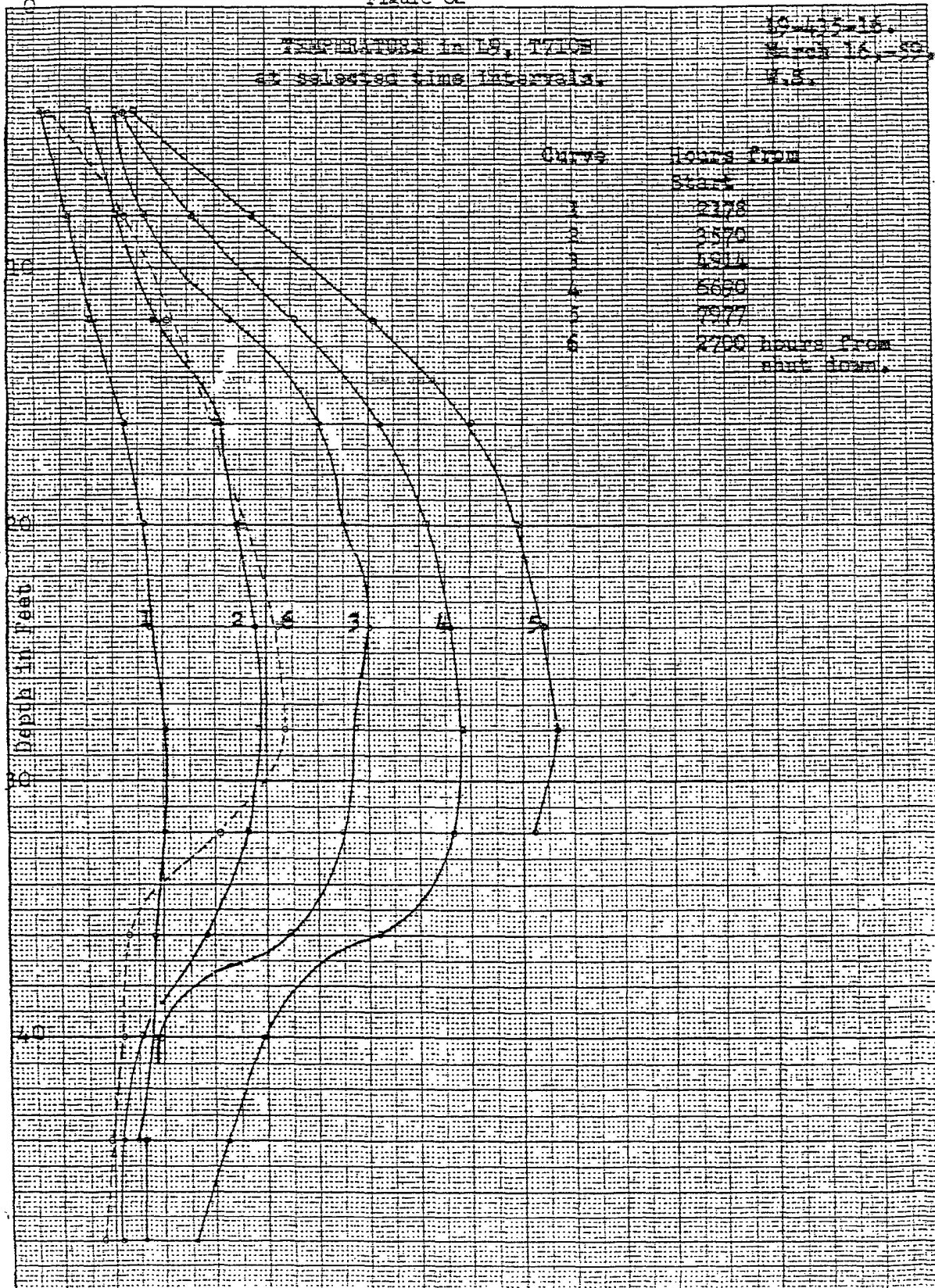


Figure 63

TEMPERATURE IN °C, 27100
at selected time intervals.

10-03-47.
March 12, 1950.
W.S.

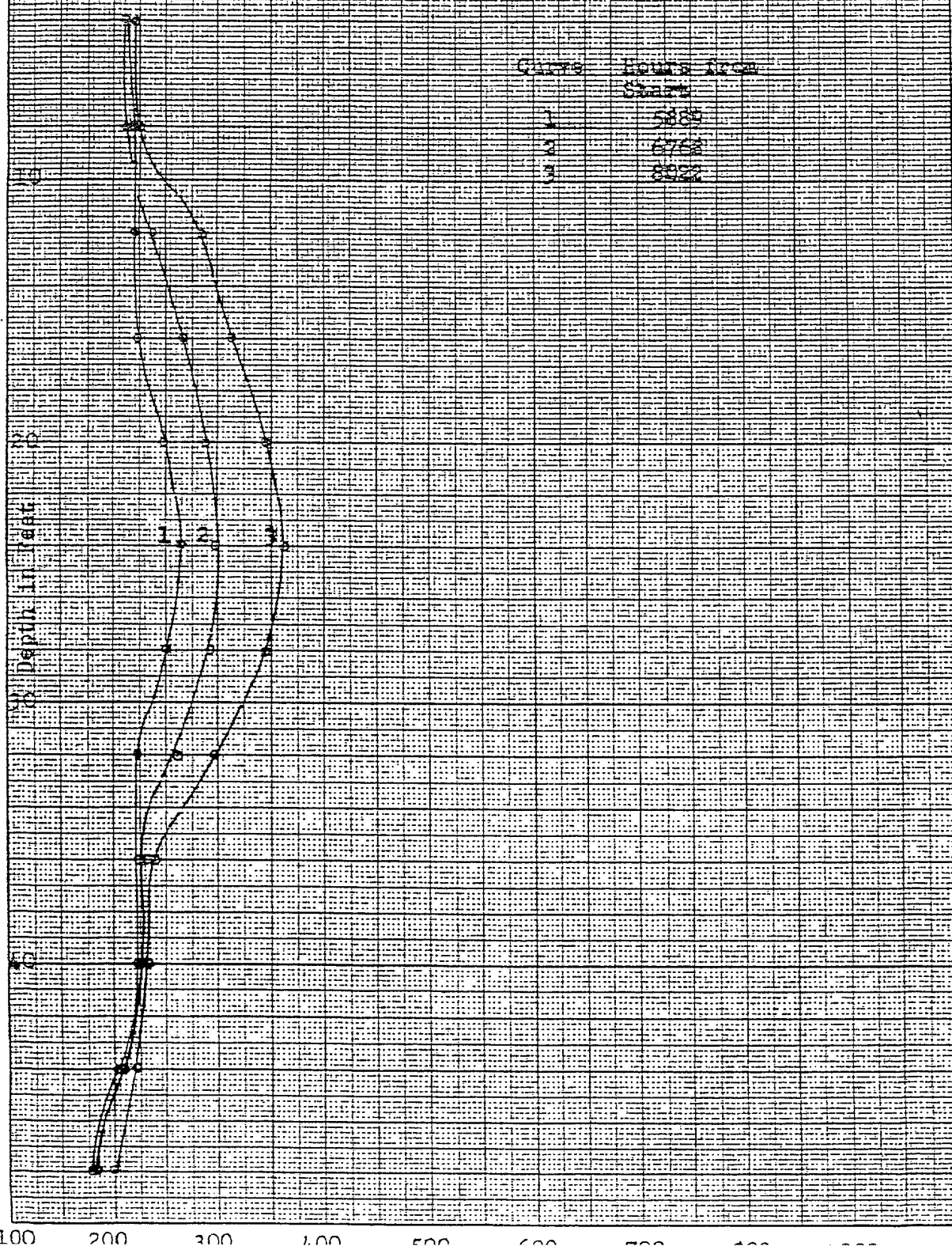


Figure 6

TEMPERATURE IN °C, °F
at selected time intervals

10-435-18.
March 16, 1959
U.S.

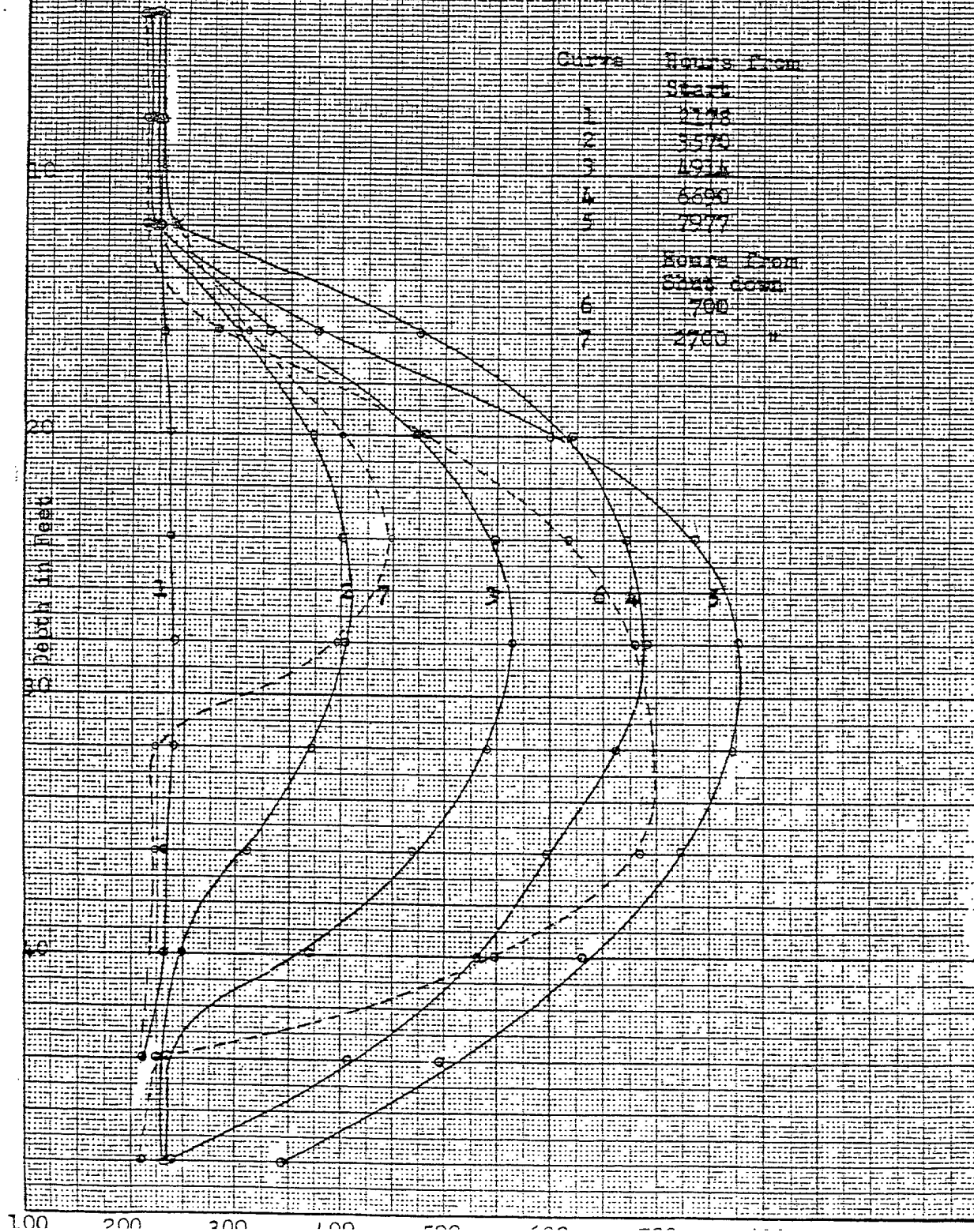


Figure 65
TEMPERATURE IN °C
at selected time intervals.

10-13-19.
March 16, 19.
S.S.

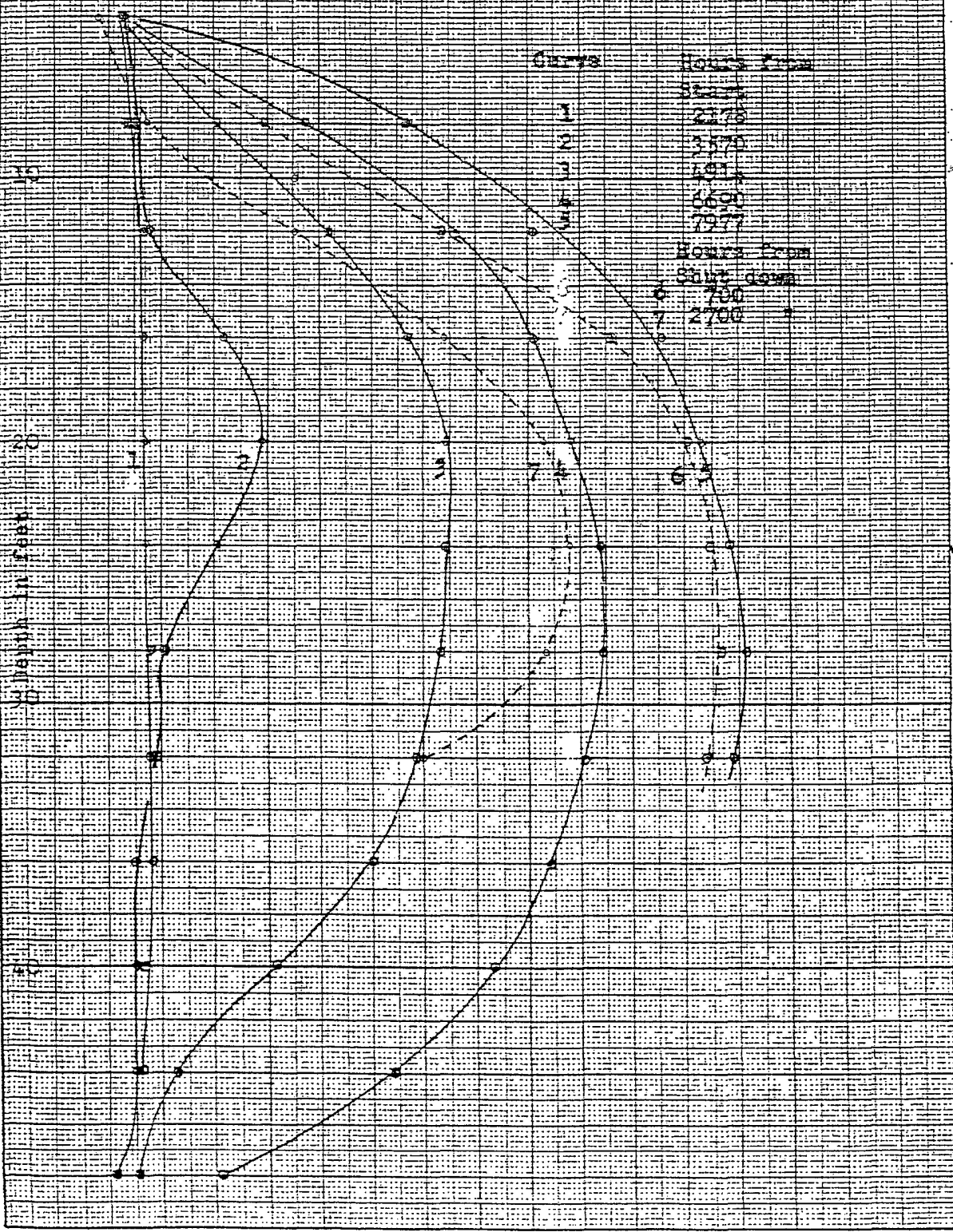


Figure 66
TEMPERATURE IN 10, 7102
at selected time intervals.

10-434-20.
March 16, 58.
W.S.

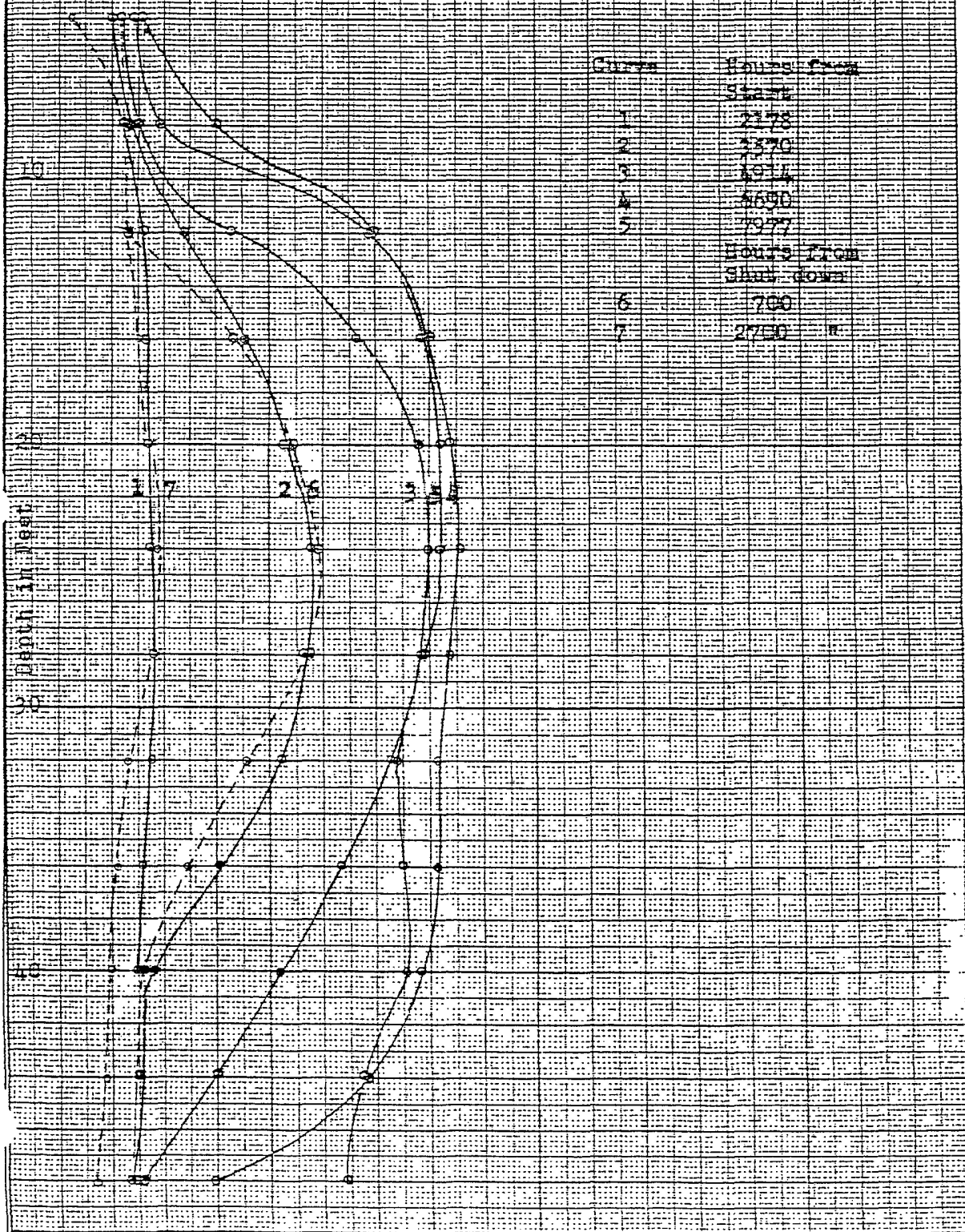


Figure 67
 THERMISTOR LOG, #106
 at selected time intervals.

IS-35-21.
 March 16, -59
 W.S.

| Curve | Hours from Start |
|-------|---------------------|
| 1 | 5738 |
| 2 | 6768 |
| 3 | 8022 |

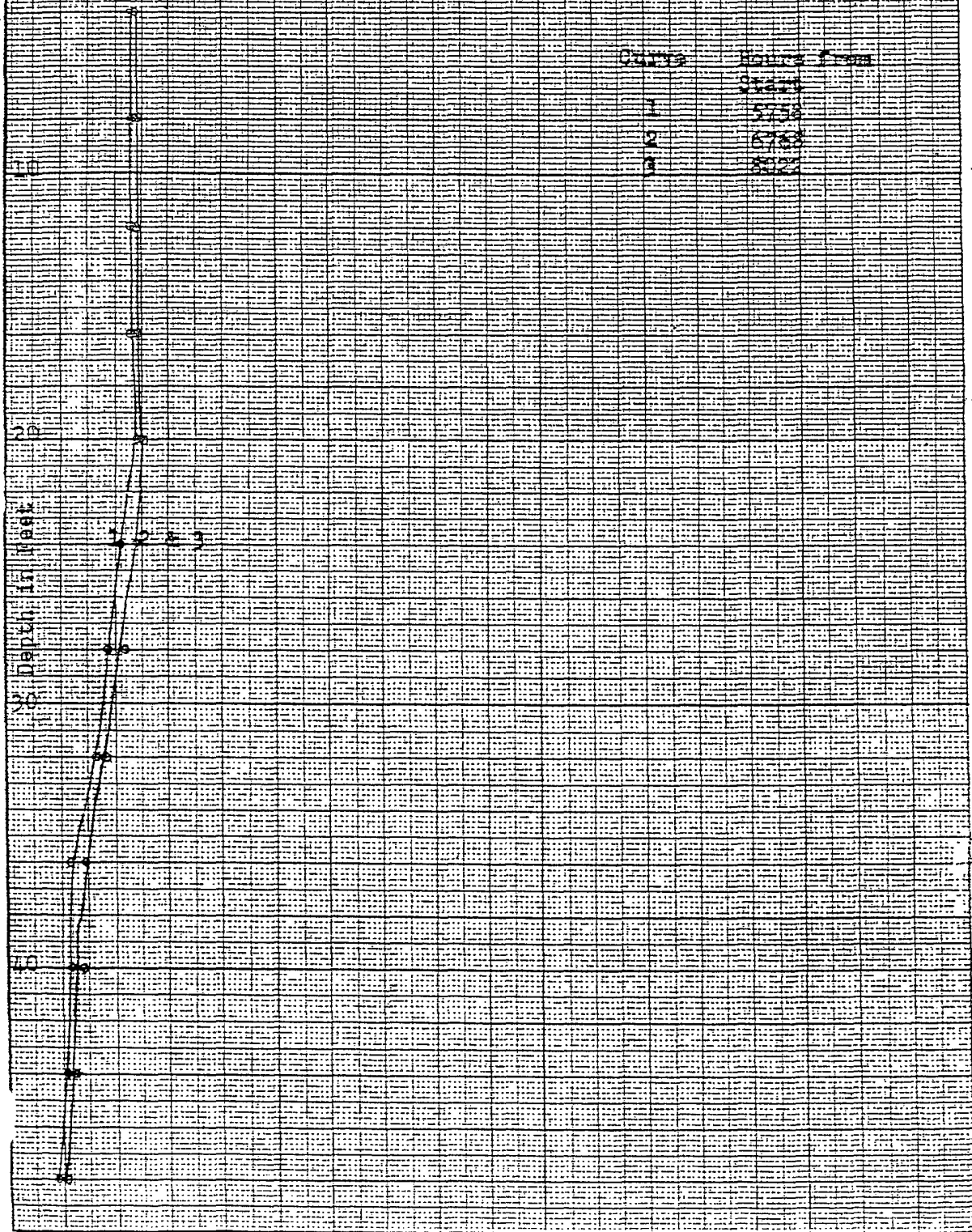
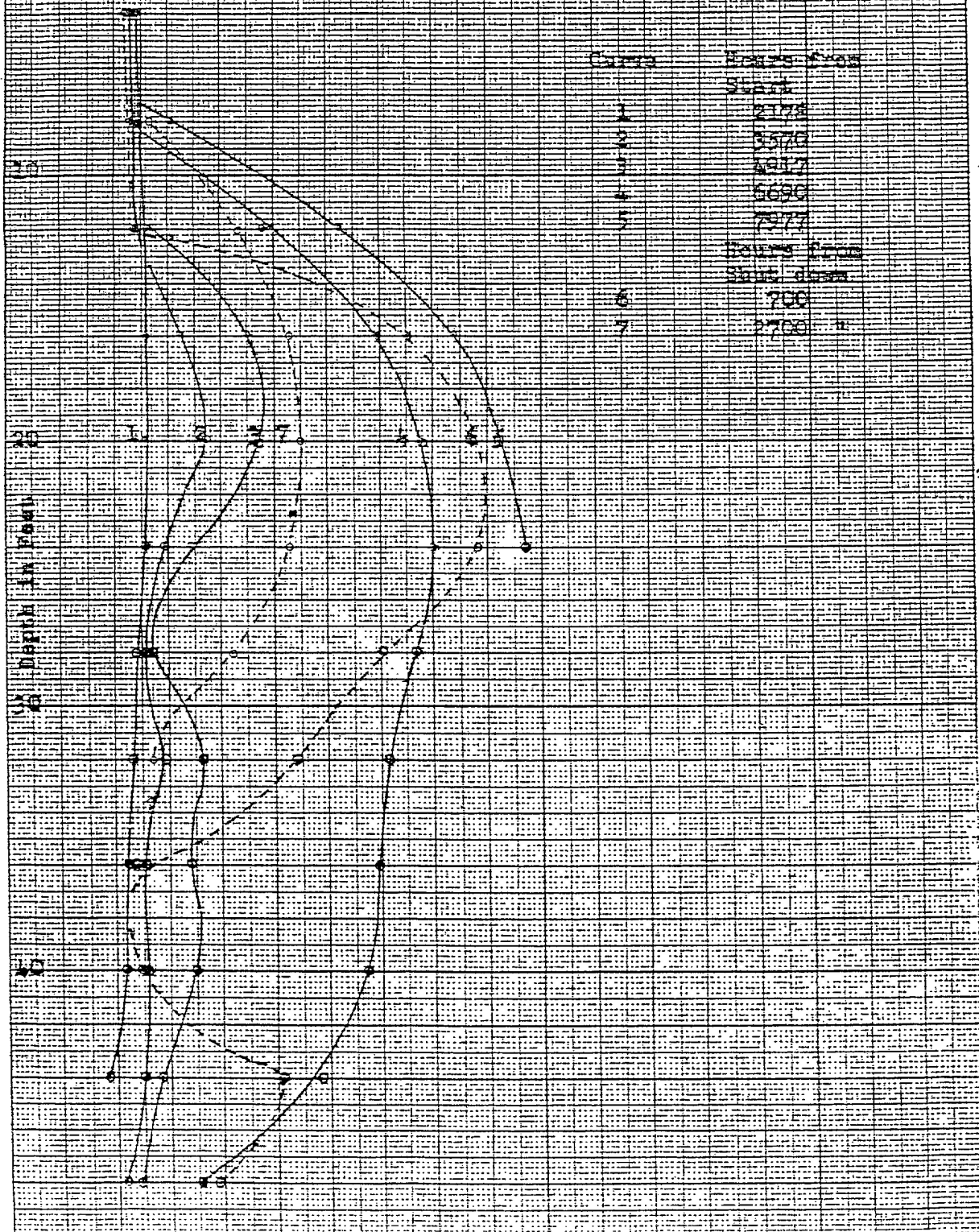


Figure 68

TEMPERATURE IN 10' WIDE
at selected time intervals.

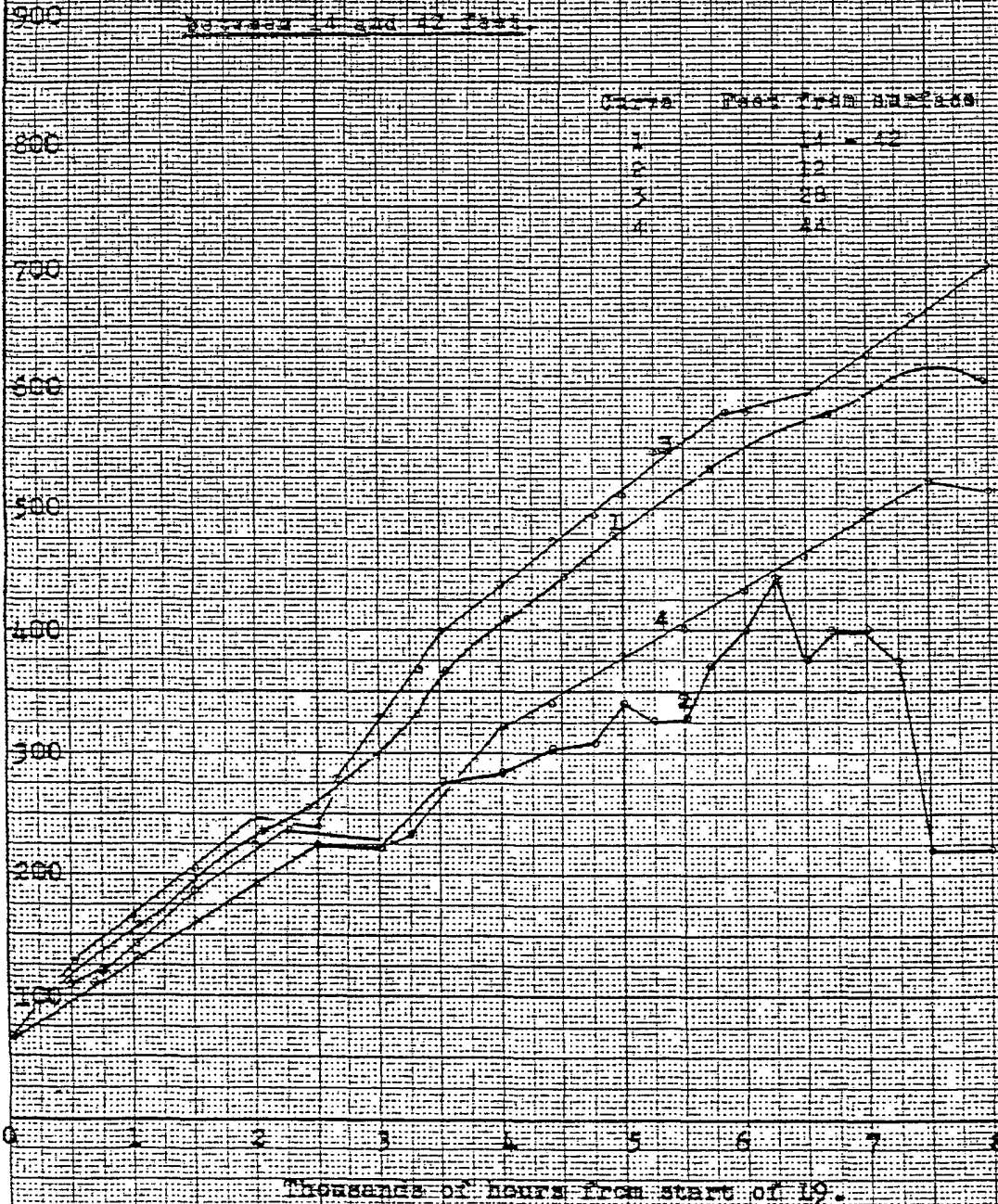
10-10X-25,
March 16, 59.
S.S.



19-436-1.
April 17-59. NS.

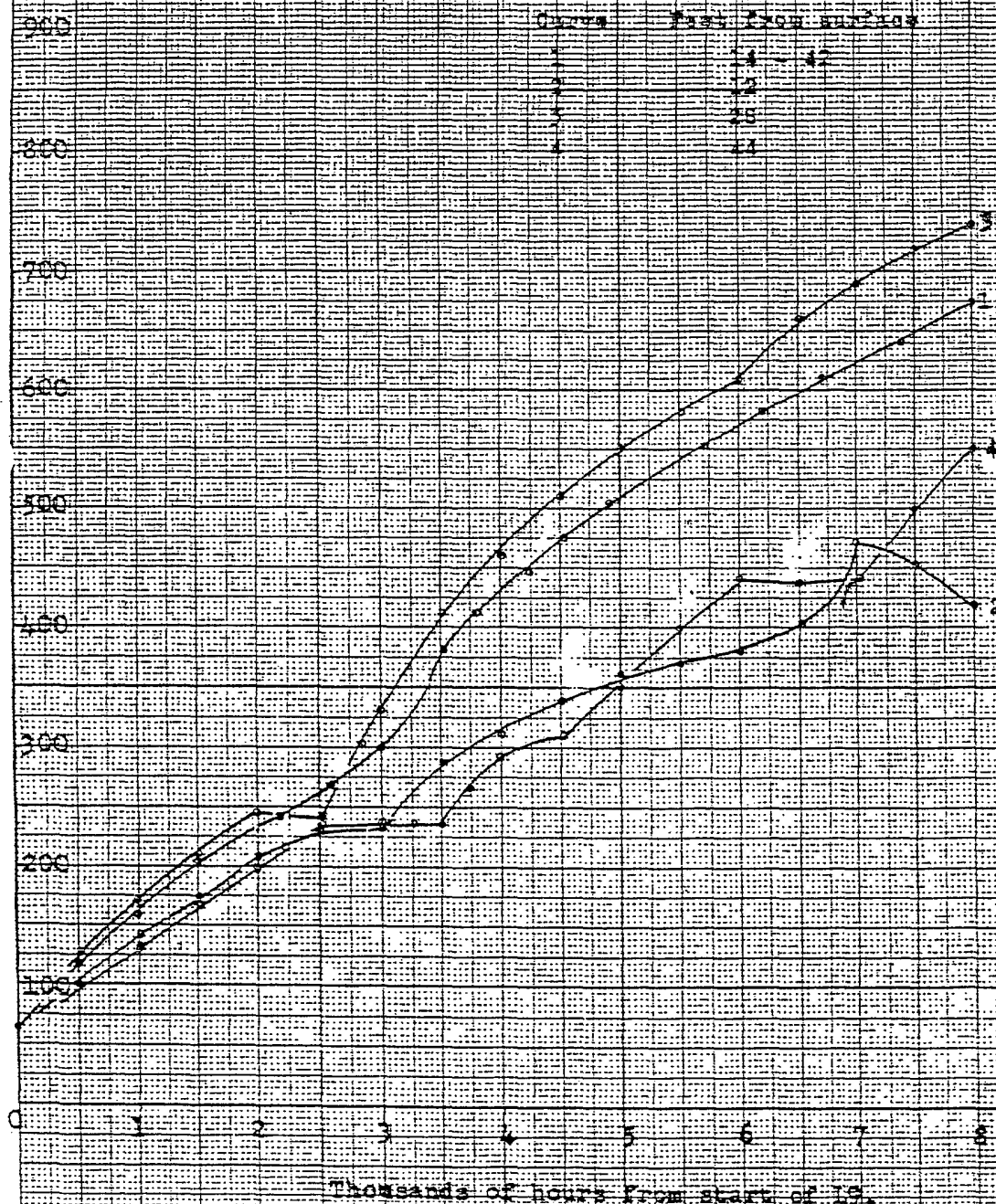
Figure 6
TEMPERATURE IN 19-422
at 12, 28, 44 feet and average temp.
between 14 and 17 feet

| Curve | Feet from surface |
|-------|-------------------|
| 1 | 12 |
| 2 | 28 |
| 3 | 44 |
| 4 | 24 |



TEMPERATURE IN 191 T22 AT 12.28.44 FEET
AND SPREAD TEMPS. BETWEEN 11 AND 12 FEET

39-475-2,
4.13.59.75.



TEMPERATURE IN DEG. F. AT 12, 28, 44 FEET
AND AVERAGE TEMP. BETWEEN 12 AND 44 FEET

12-436-3
4-13-59-48

| CURVE | FEET FROM SURFACE |
|-------|-------------------|
| 1 | 12 44 |
| 2 | 12 |
| 3 | 28 |
| 4 | 44 |

300

200

100

0

300

200

100

0

1

2

3

4

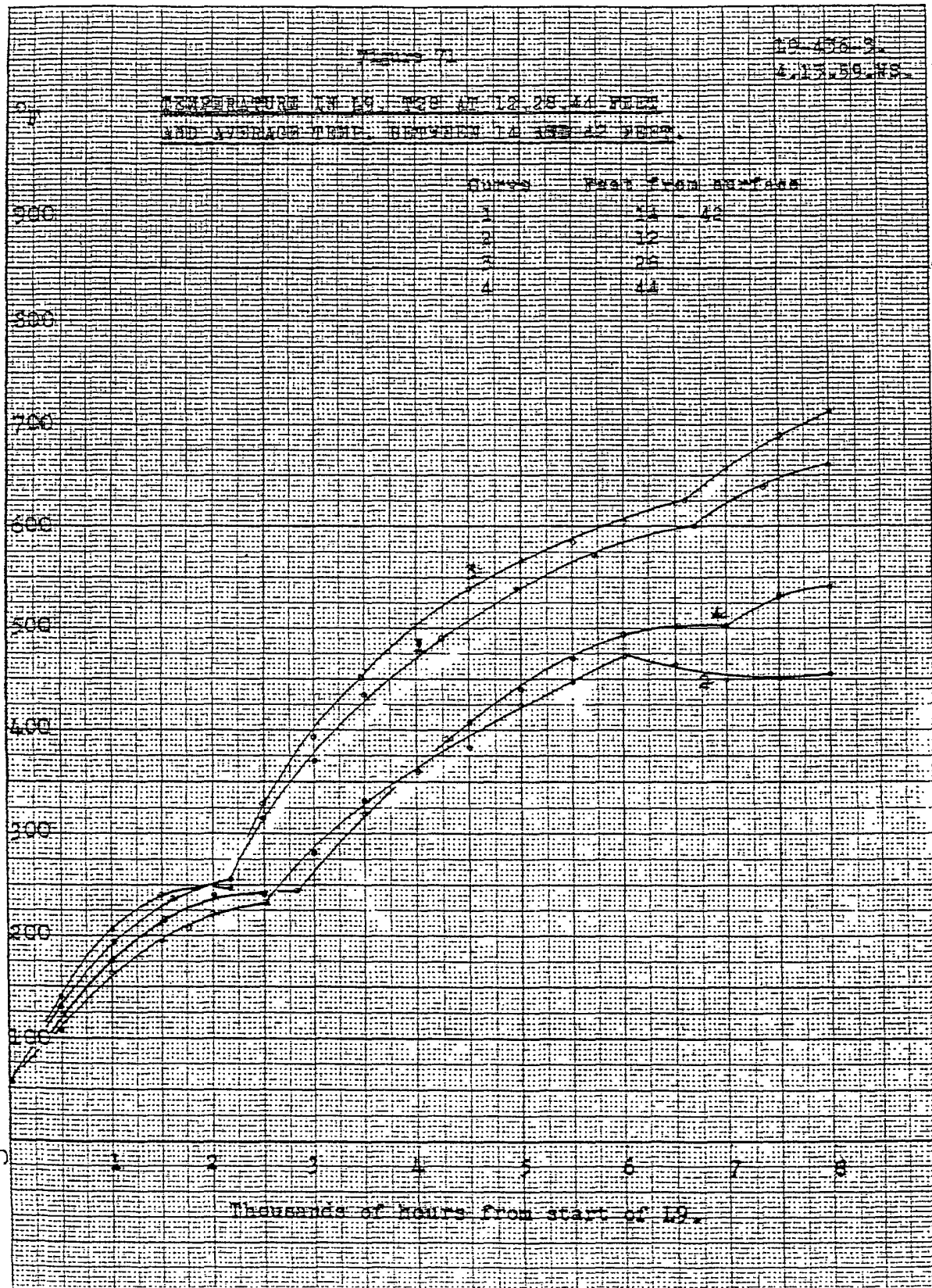
5

6

7

8

Thousands of hours from start of L9.



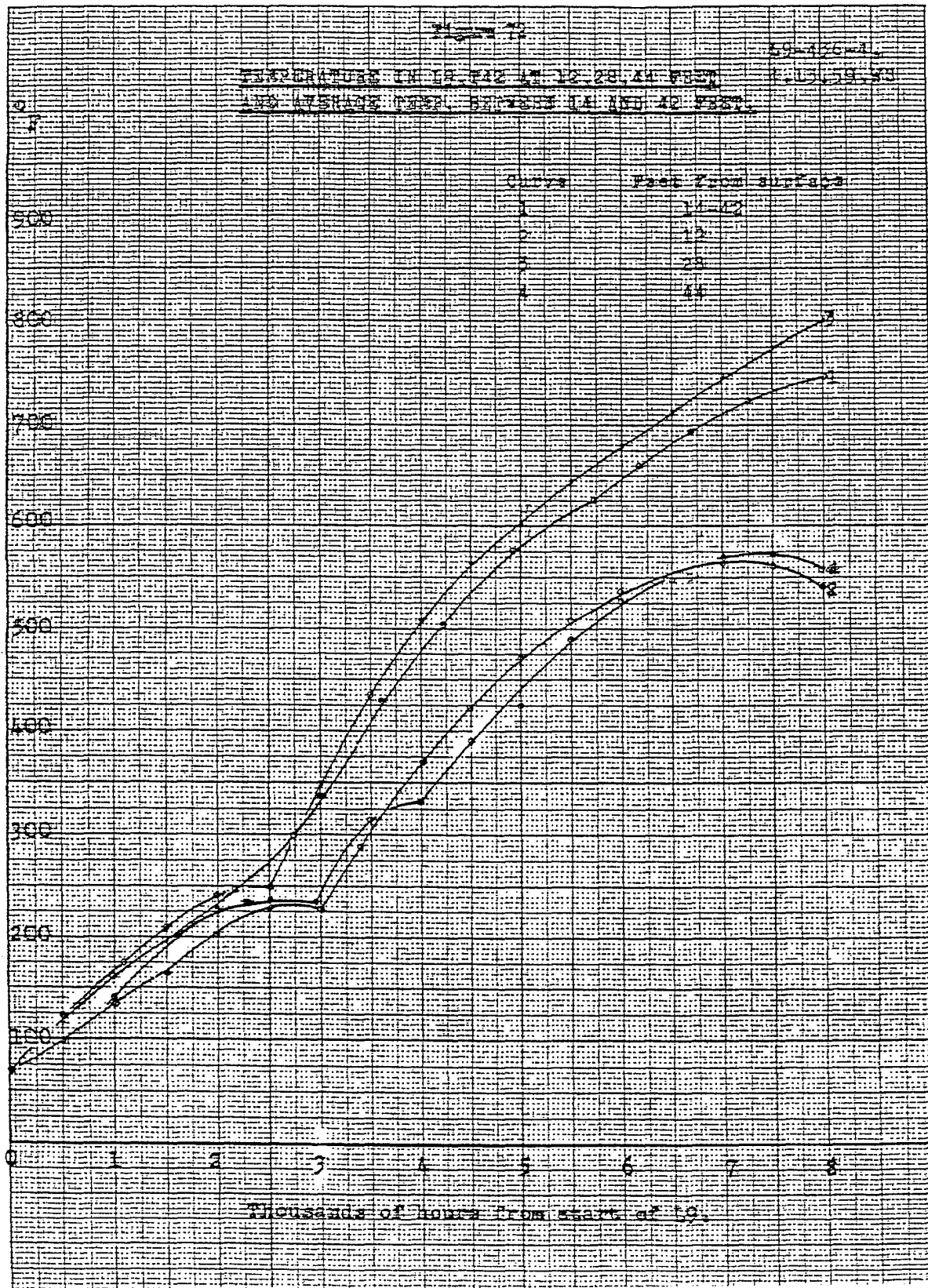


Figure 7

29-326-5
4.13.55.20.

TEMPERATURE IN °F. FOR 12, 23, 44 HRS.
AVERAGE TEMP. BETWEEN 12 AND 42 HRS.

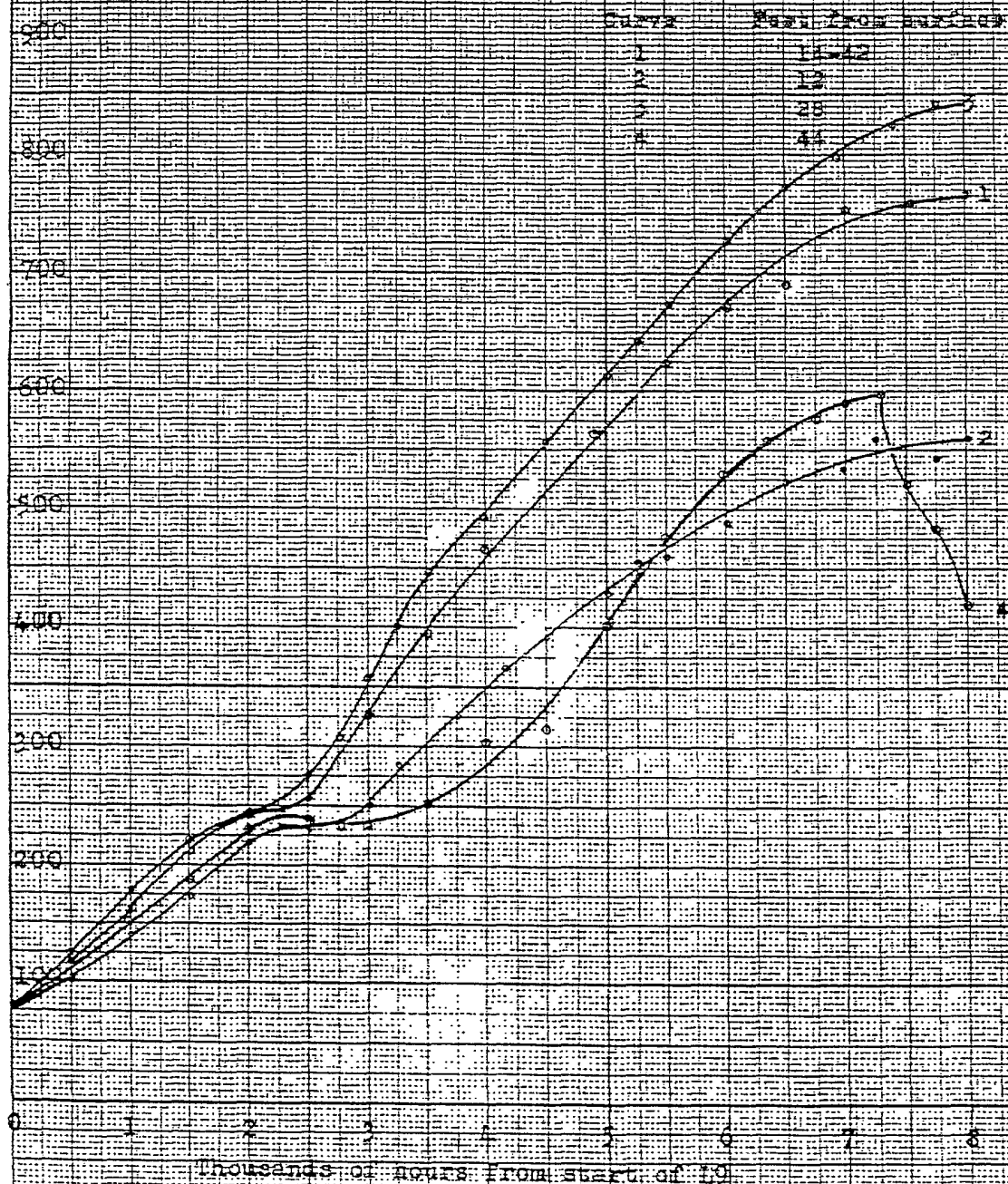
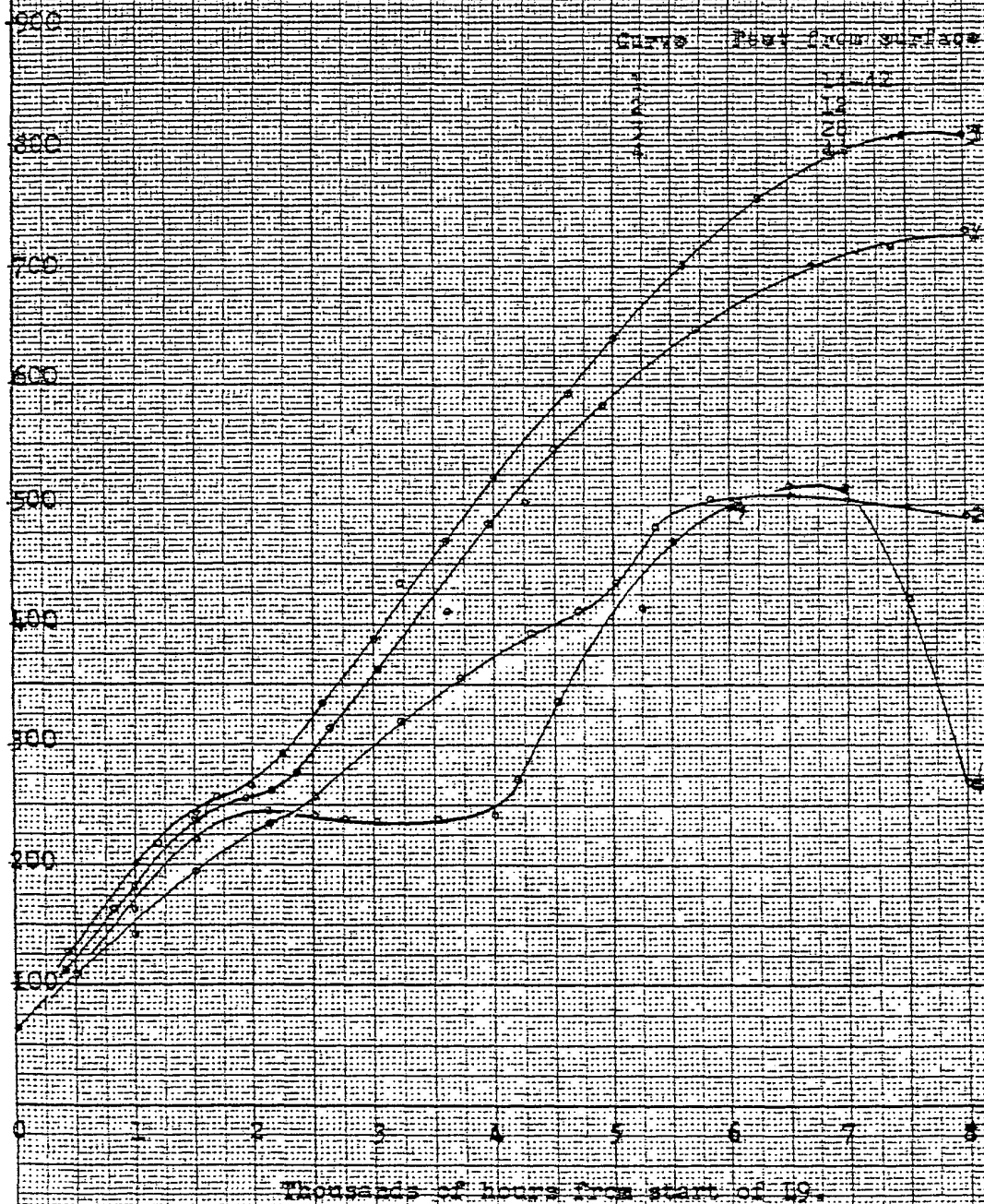


FIGURE 74

HC-476-61

4.13.59.128

TEMPERATURE IN 19. T18 AT 12.08 AL FEET
AND AVERAGE TEMP. BETWEEN 14 AND 43 FEET.



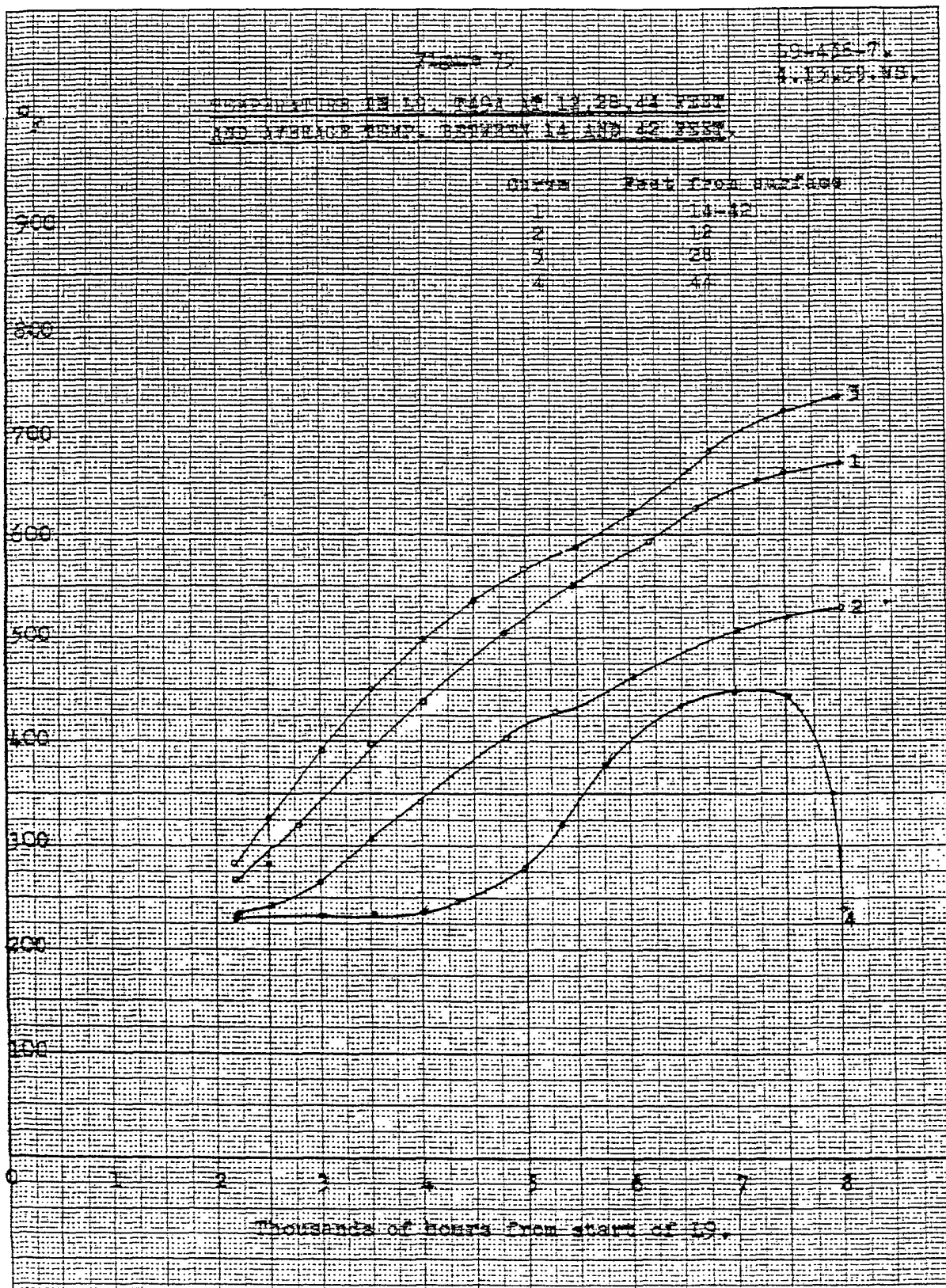
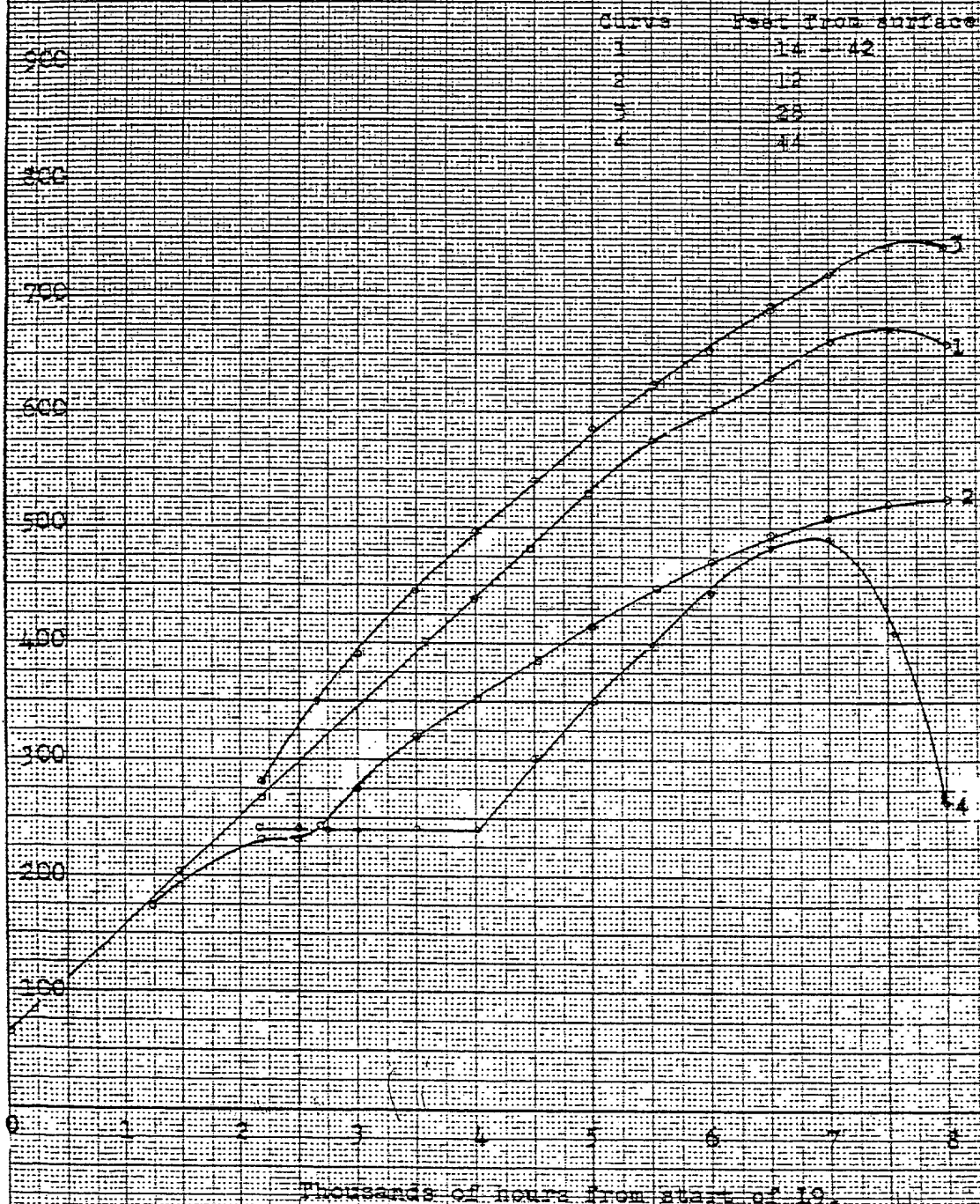


Figure 76

NO. 438-2
4.12.59.MB.

TEMPERATURE IN 69.7492 AT 12.26.44 PM
AND 4.22.402 PM. BETWEEN 11 AND 12 FEET



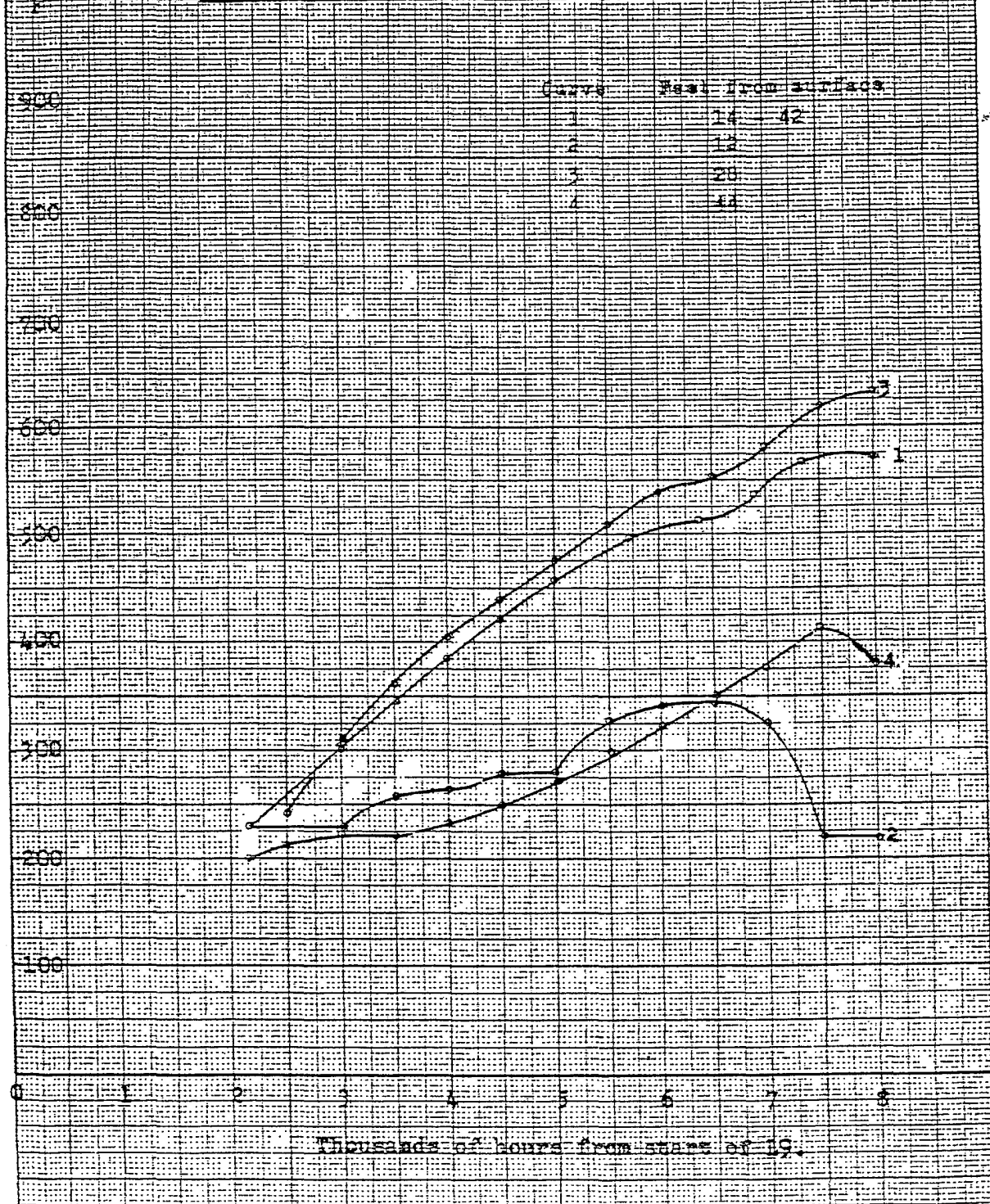
Page 77

10-436-9.

TEMPERATURE IN DEGREES AT 12, 26, 42 FEET

4.13.59.WS.

AND DEPTH TIME CURVES 12, 26, 42 FEET



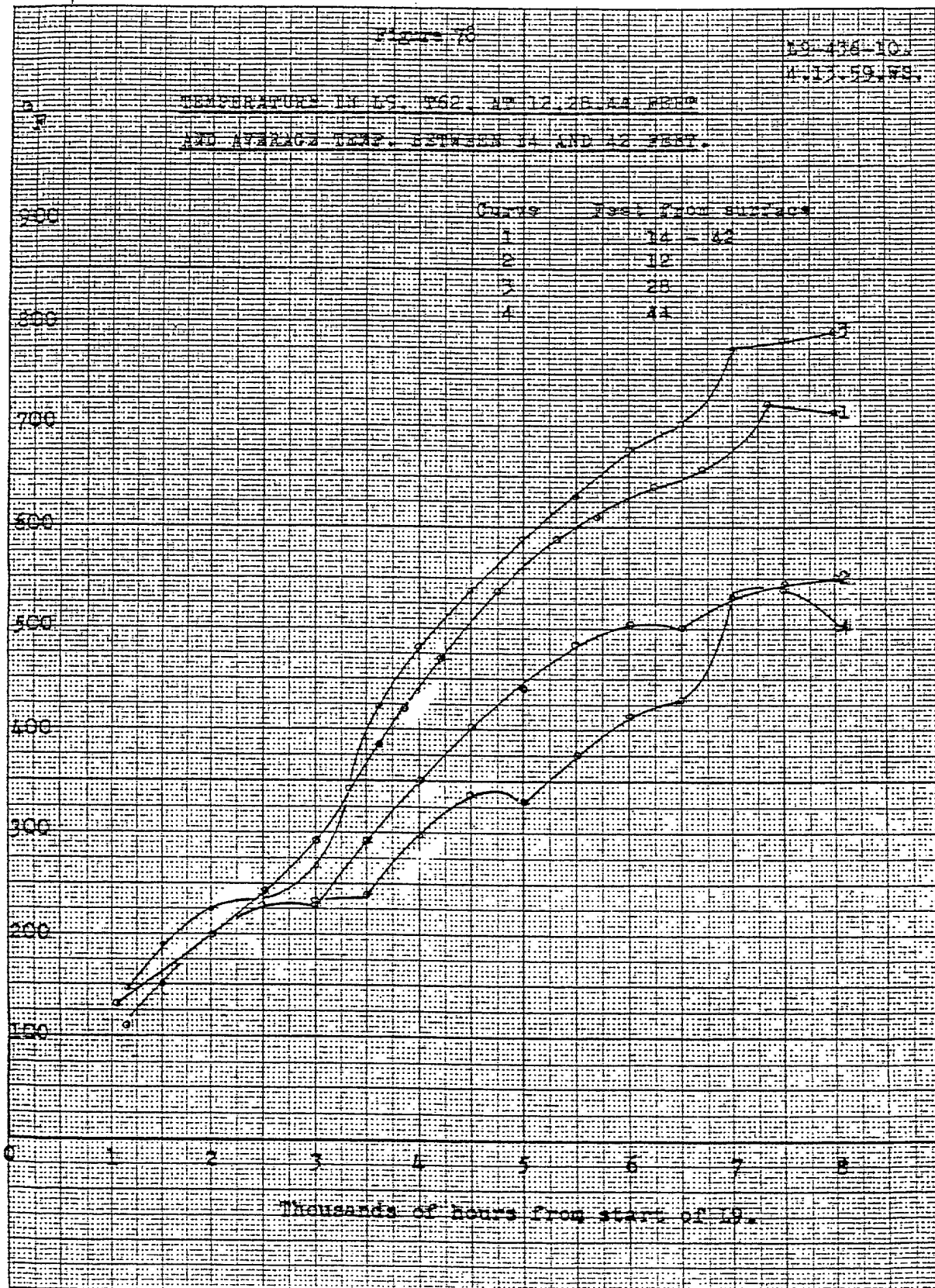


Figure 79

19-436-11.
4.13.50.YS.

TEMPERATURE IN DEG. F. AT 12, 28, 44 FEET
AND AVERAGE TEMP. DEPTHS 12 AND 40 FEET.



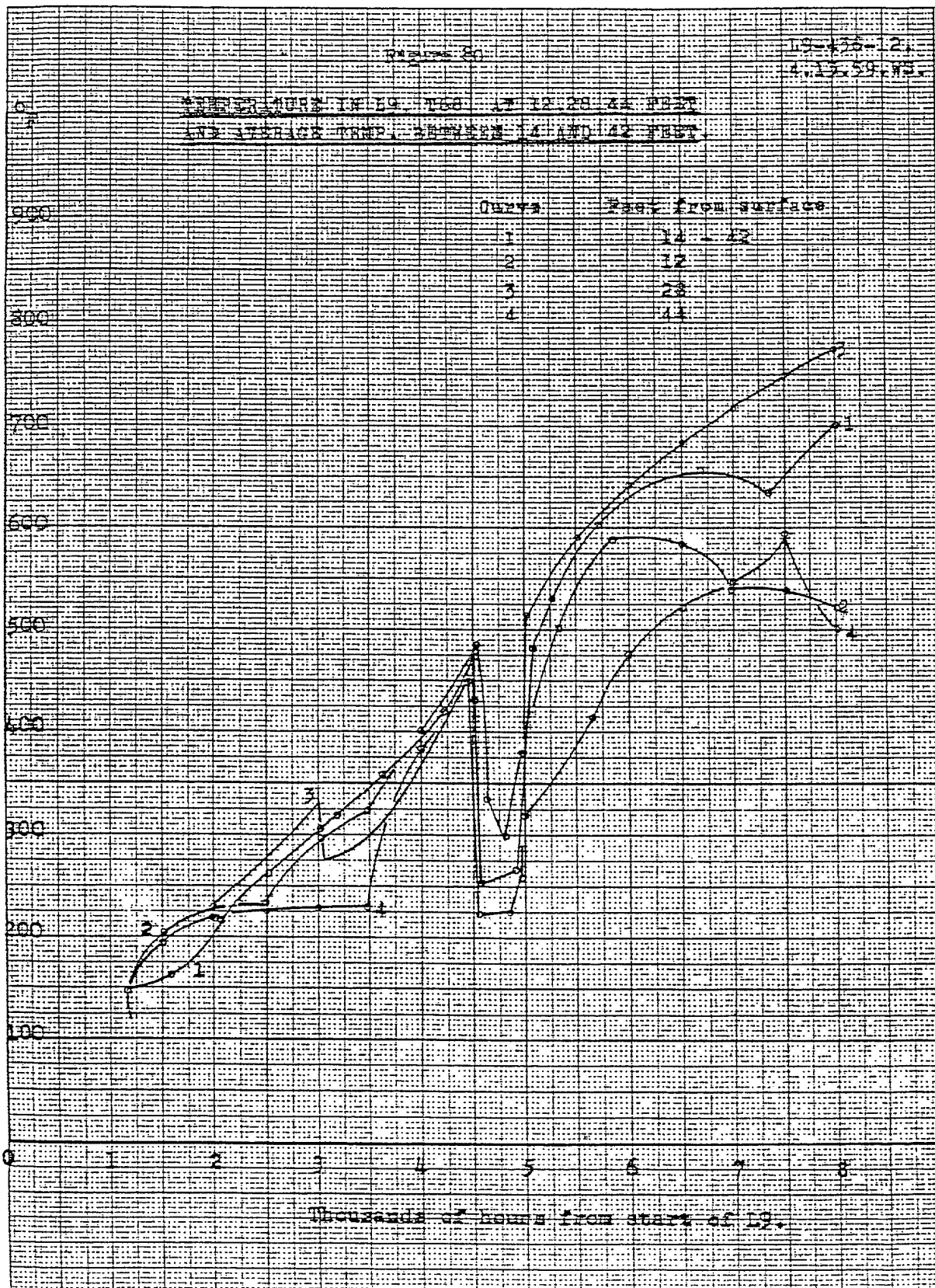


Figure 31

1944-45
4.13.45.45.

TEMPERATURE IN IN. 25. 27.1. 17 12.25. 44 7537

AND AVERAGE DEPTH BETWEEN 14 AND 40 FEET

| Curve | Feet from surface |
|-------|-------------------|
| 1 | 12 - 42 |
| 2 | 12 |
| 3 | 28 |
| 4 | 40 |

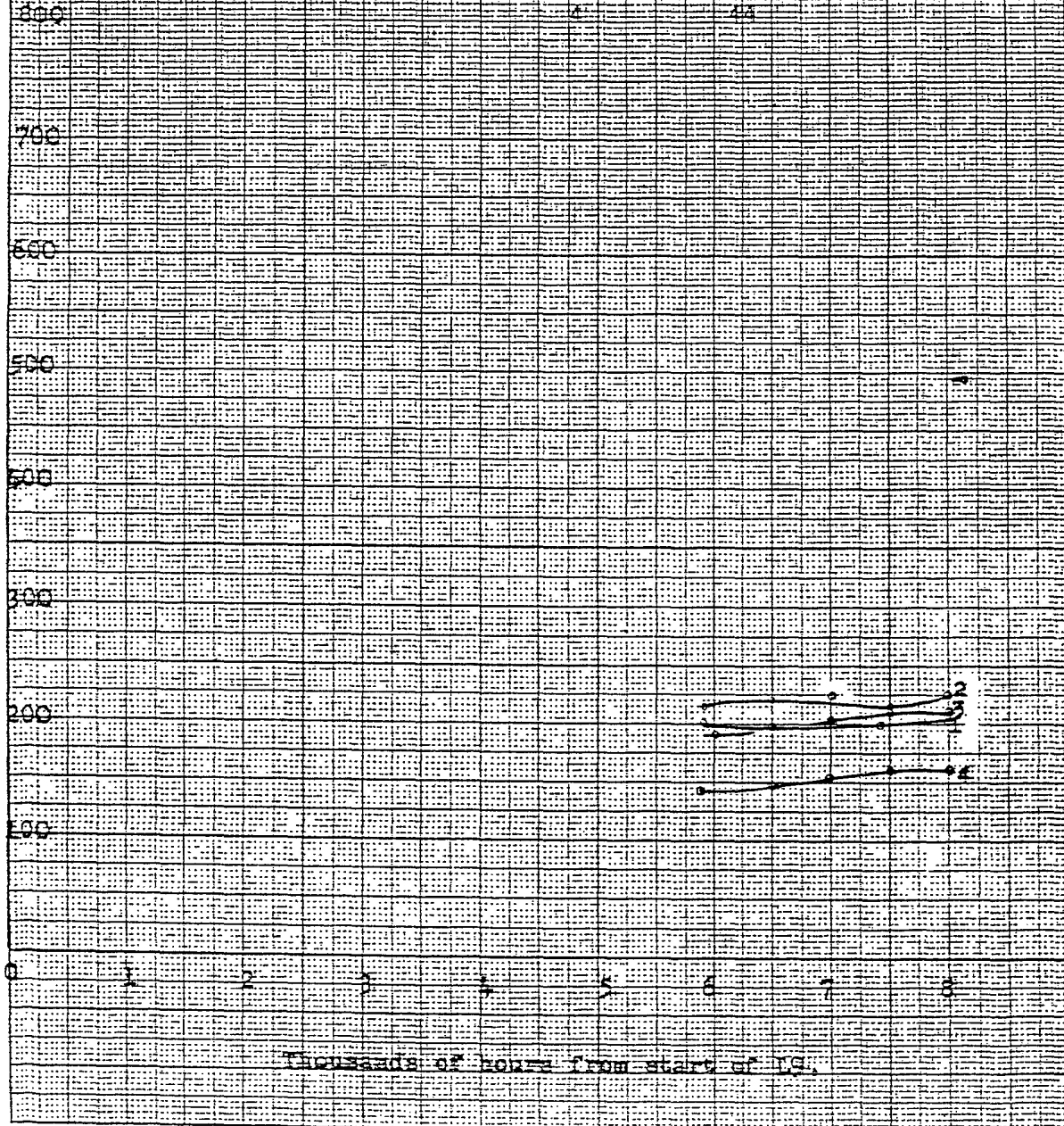
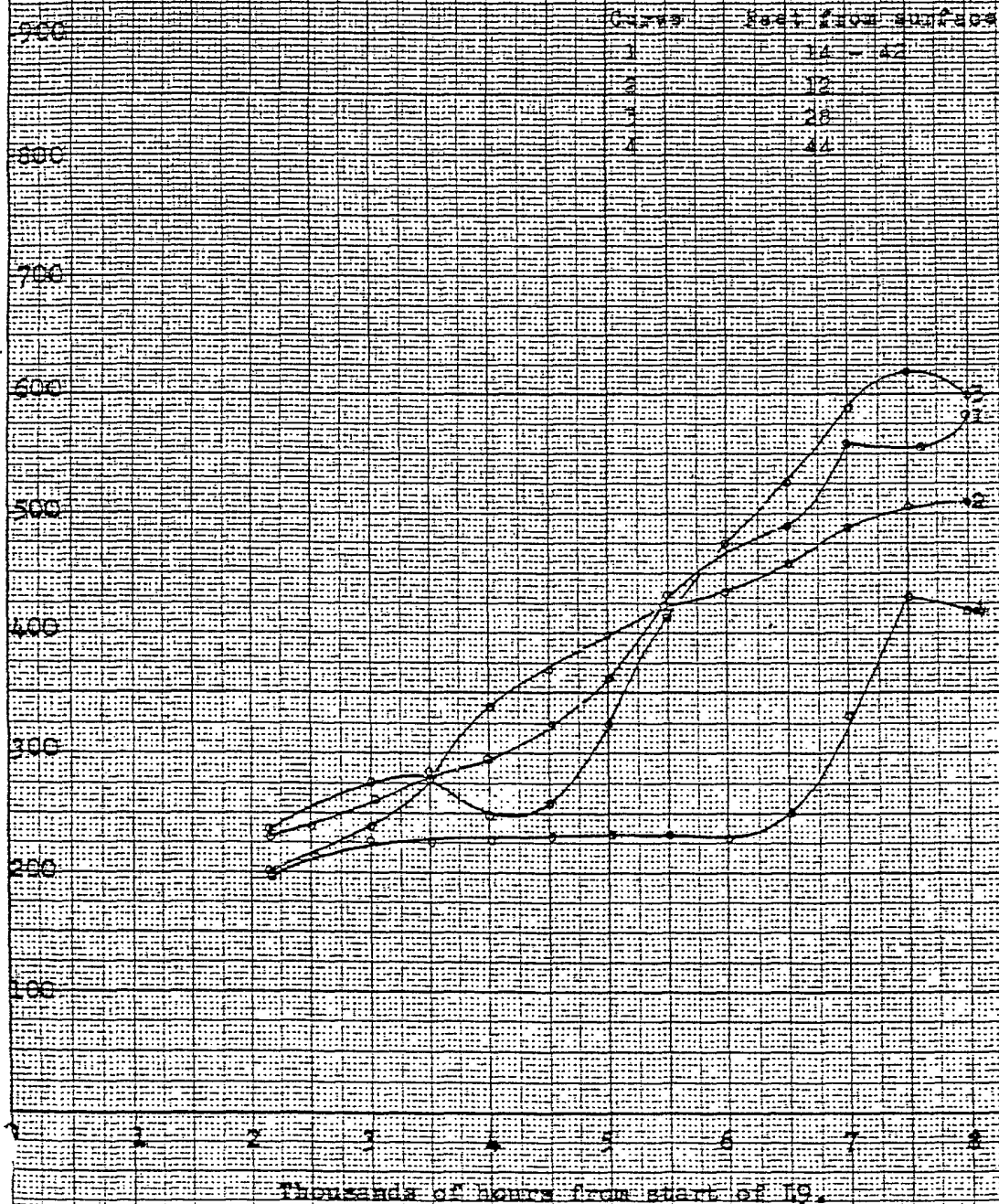
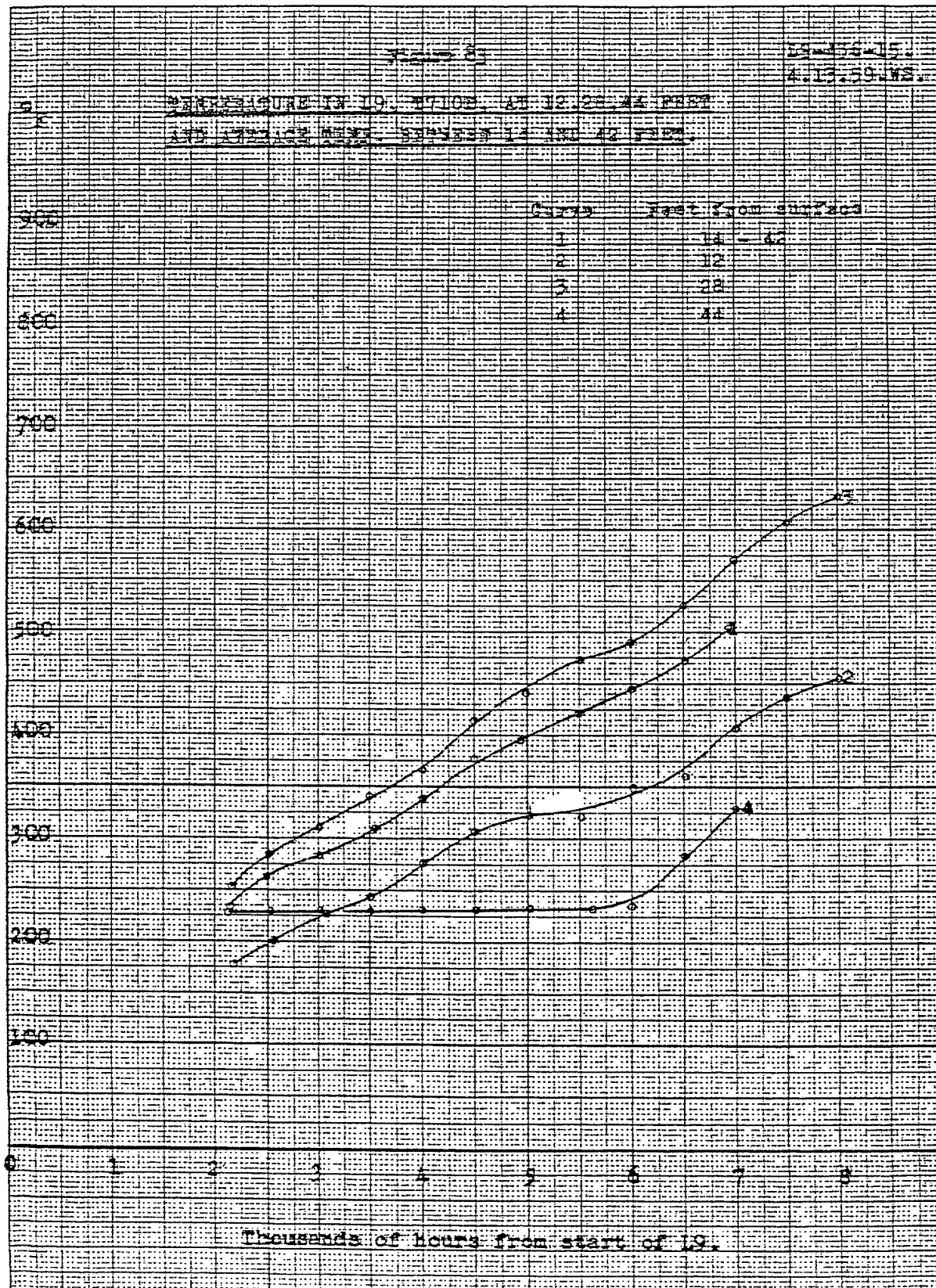


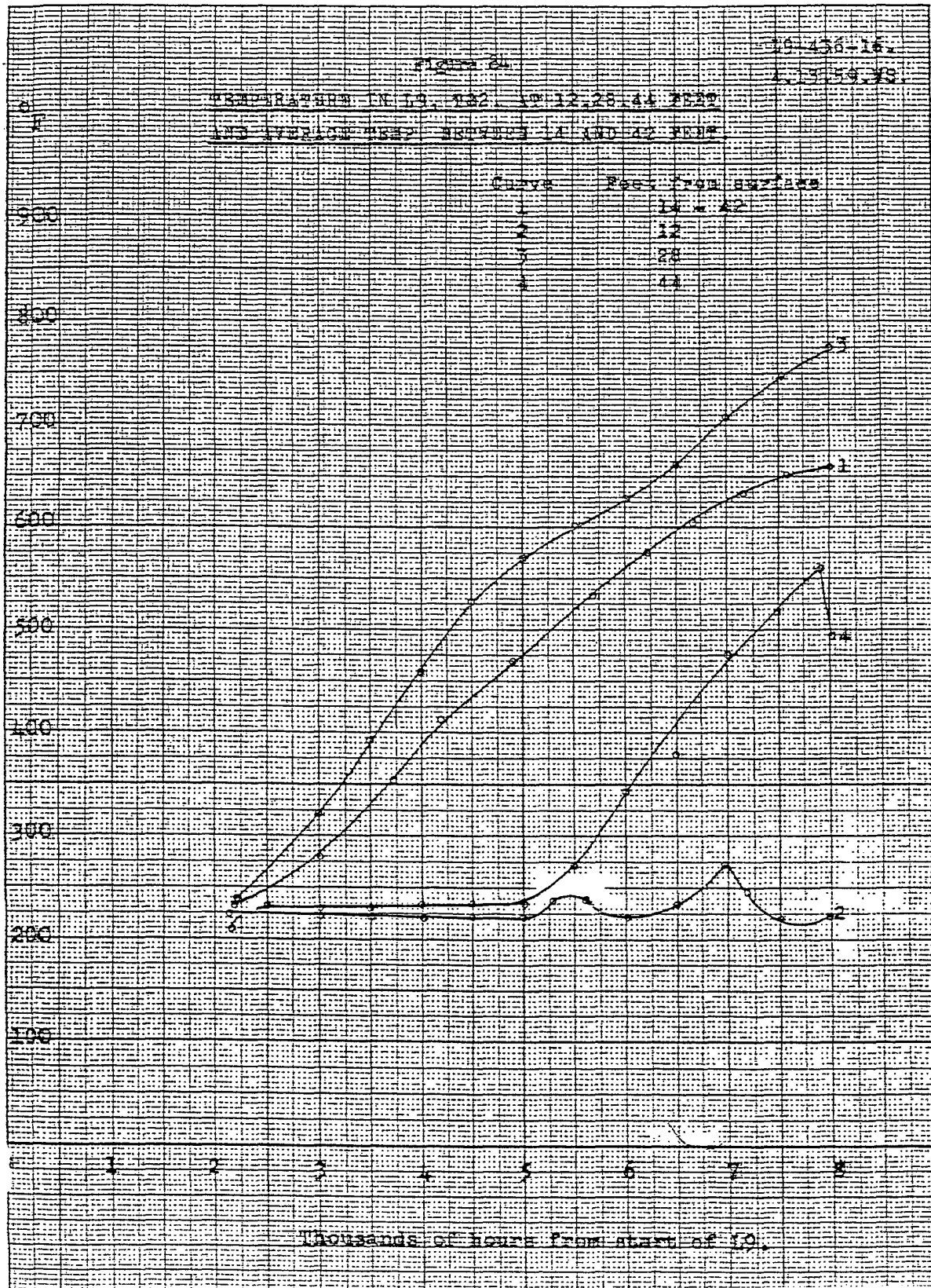
Figure 20

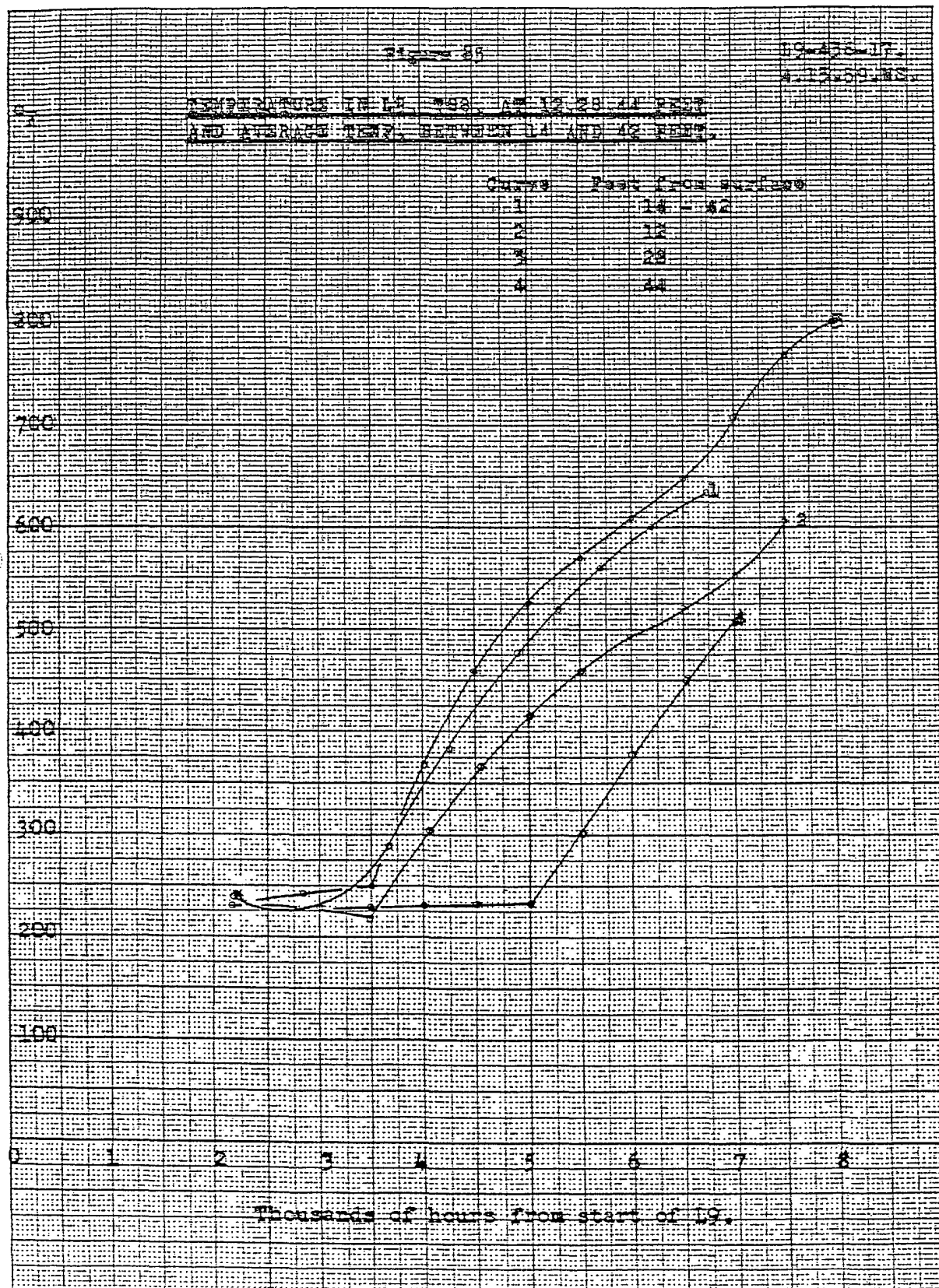
19-476-14.
4.13.65.WS.

TEMPERATURE IN 19. 47101. AT 12.25.41 PM.
AND AVERAGE TEMP. BETWEEN 14 AND 43 PM.









Page 25

10-436-18.

July 19, 1955.

TEMPERATURE IN 19, FLOZ, AT 12, 28, 44 FEET
AND AVERAGE TEMP. BETWEEN 12 AND 28 FEET.

| Curve | Feet from surface |
|-------|-------------------|
| 1 | 12-44 |
| 2 | 12 |
| 3 | 28 |
| 4 | 44 |

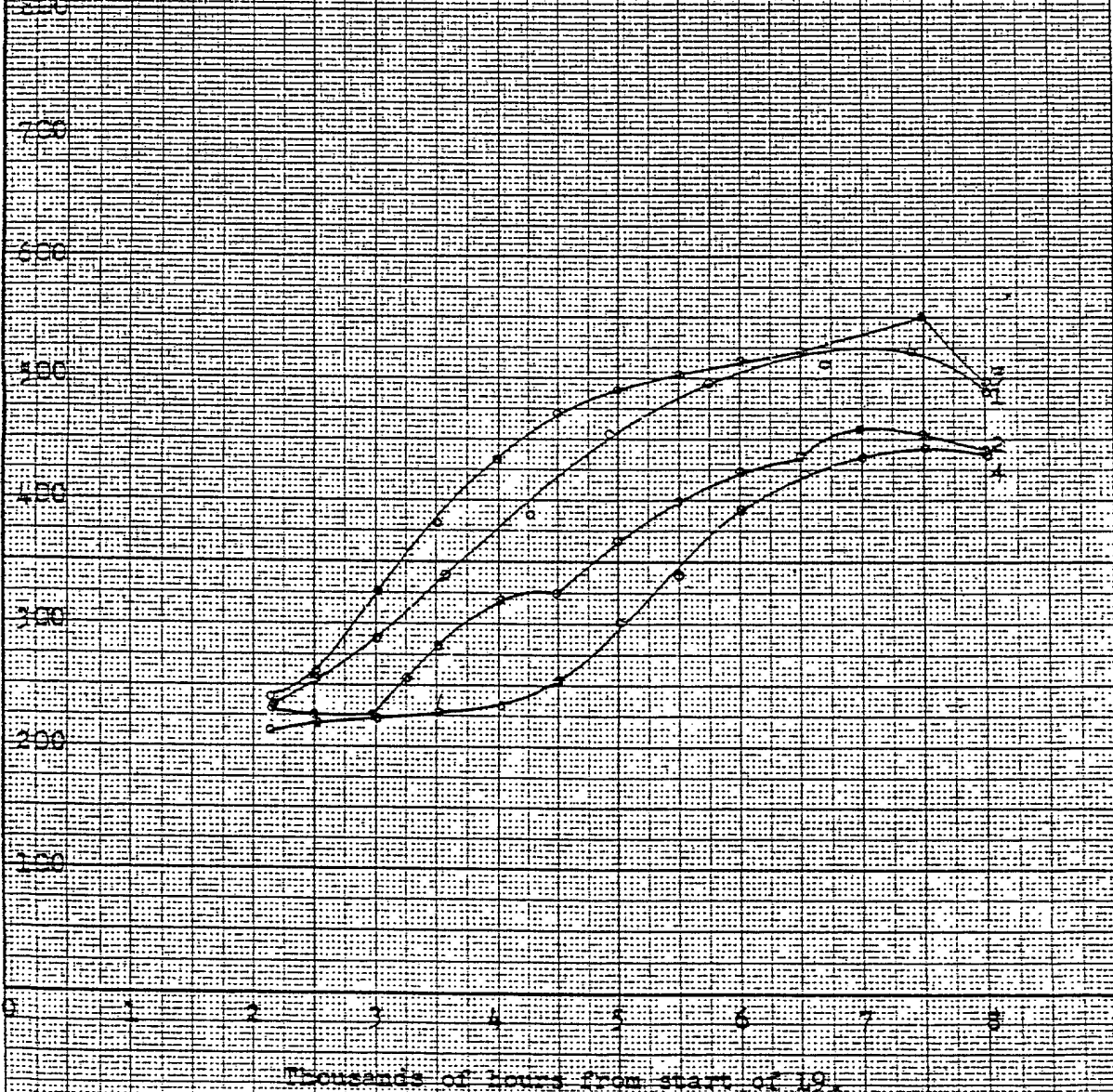


Figure 8:

1947-48-49.

4.11.59.12.

STATIONARY IN 19, 1902, 1912, 1924, 1934, 1944

50 AVERAGE TEMPERATURE 1912 AND 1924

| Curve | Feet from surface |
|-------|-------------------|
| 1 | 14-12 |
| 2 | 12 |
| 3 | 24 |
| 4 | 44 |

500

600

700

800

900

1000

1100

1200

1300

0

1

2

3

4

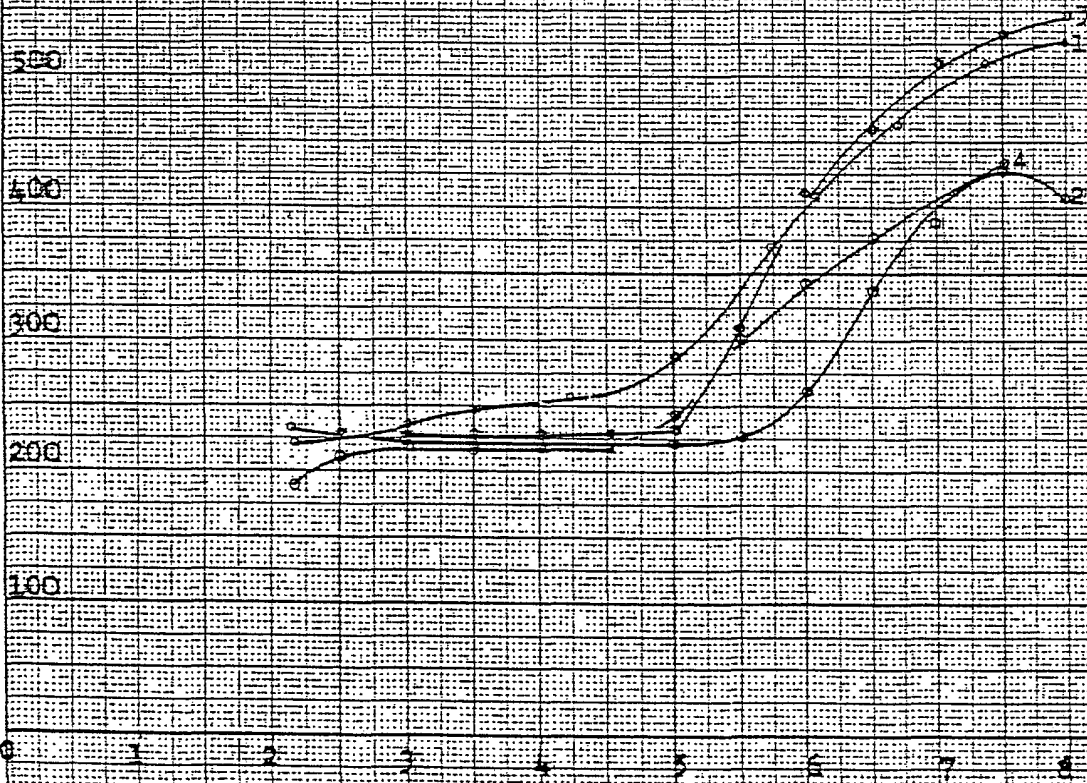
5

6

7

8

Thousands of hours from start of 19.



19-444
5-22-59 EP

Figure 88

AVERAGE TEMPERATURE AT 28 FEET AND 14 TO
42 FEET IS "WATER" TEMPERATURE WELLS
(NO. 15, 18, 22, 24, 25, 26, 28)

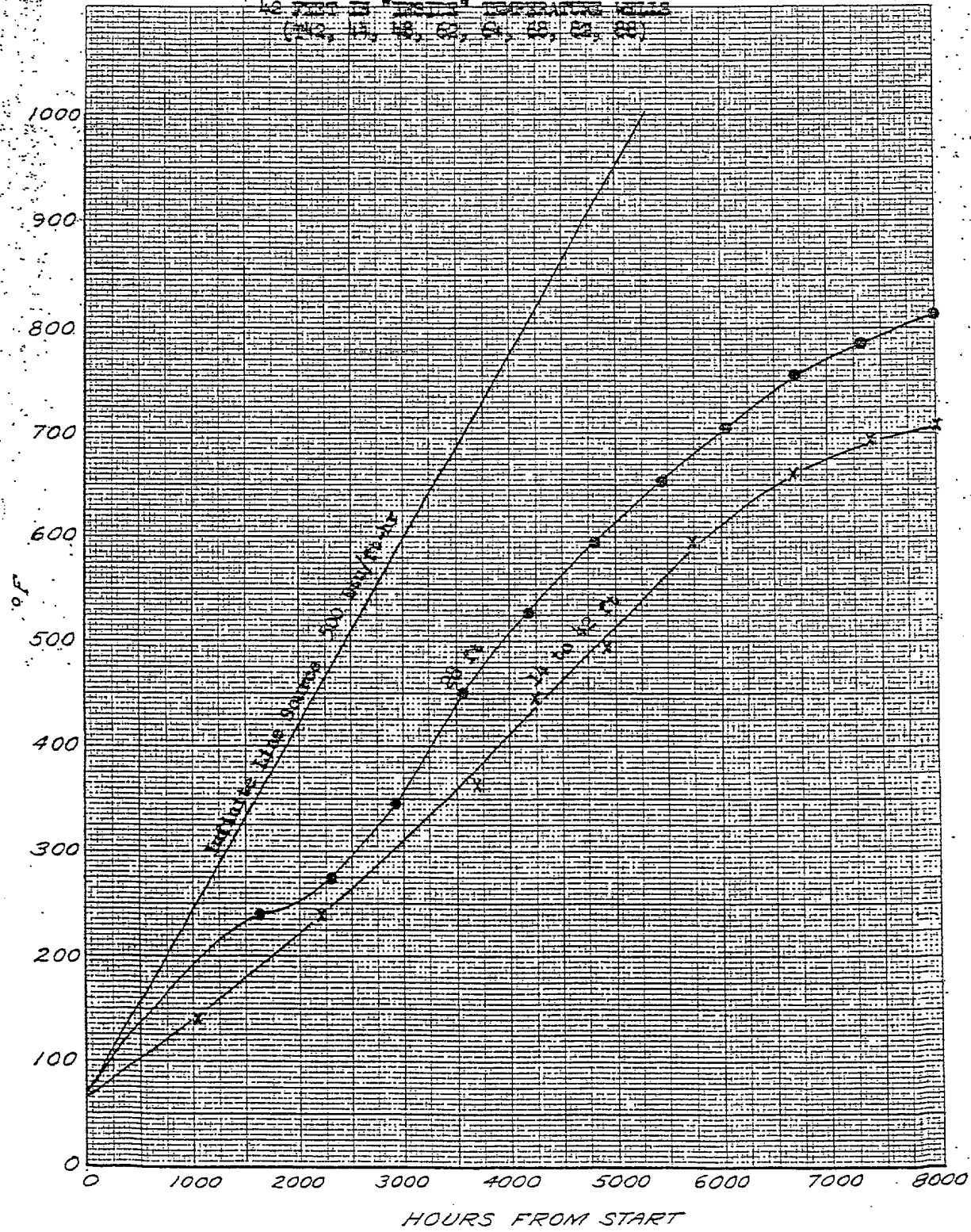


Figure 89

TEMPERATURE INSIDE BU-4, BU-5, BU-4, BU-5

10-440-11
4-20-59.WS.

SURFACE CASINGS AT 11-15 HOURS AFTER SHUT OFF

| Curve | Surface casing | Time after shut off |
|-------|----------------|---------------------|
| 1 | BU-4 | 11 |
| 2 | BU-5 | 12 |
| 3 | BU-4 | 14 |
| 4 | BU-5 | 15 |

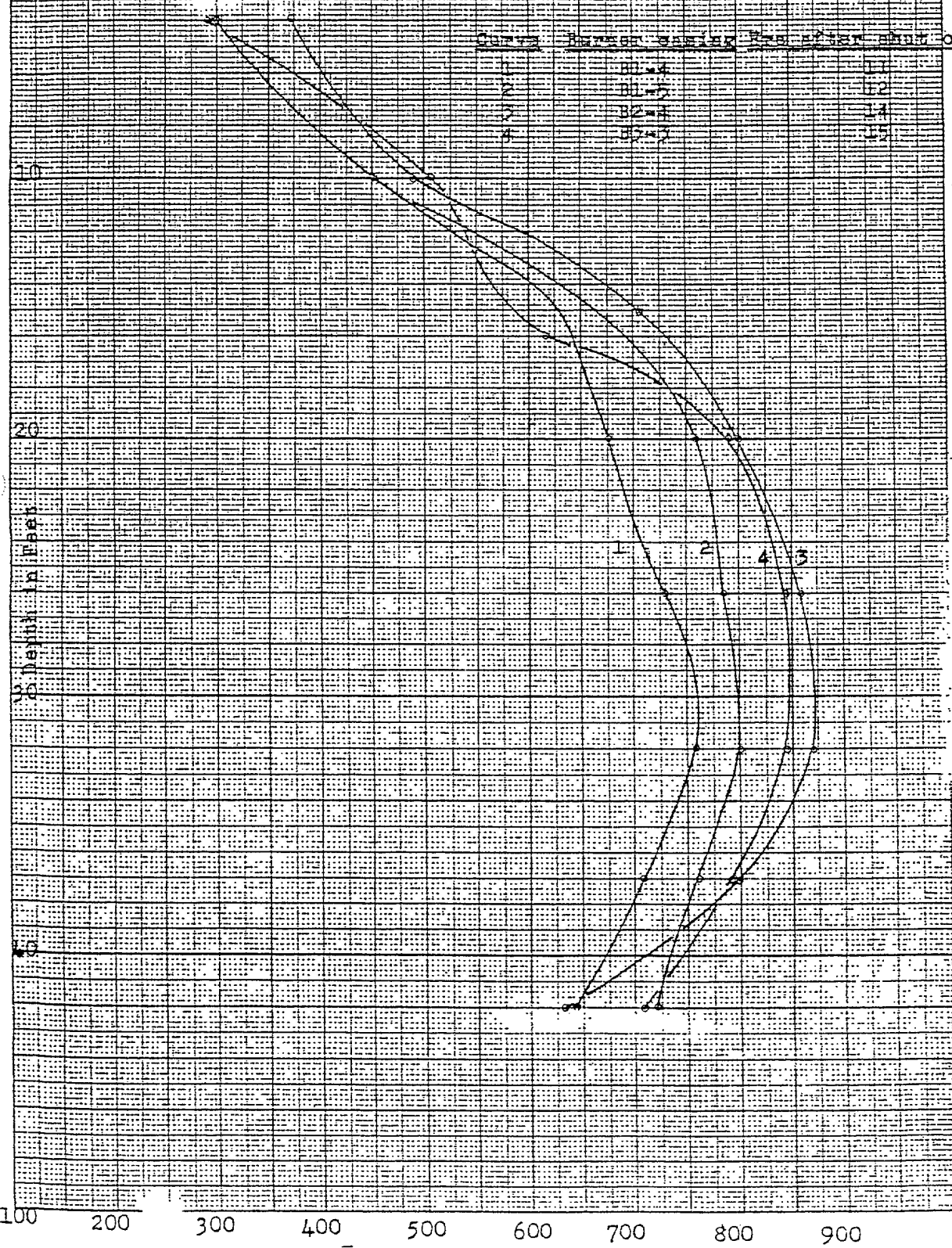
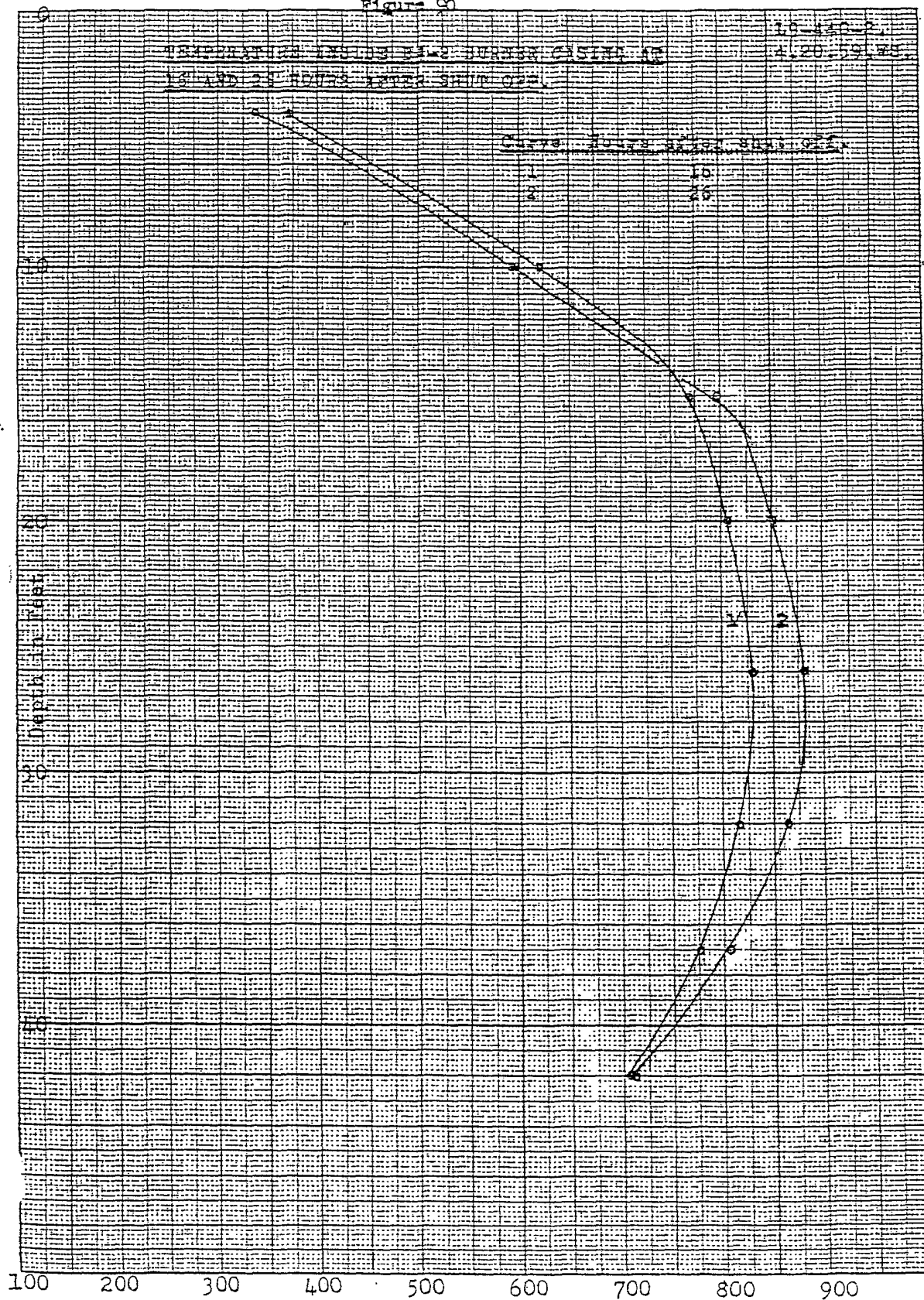


Figure 20



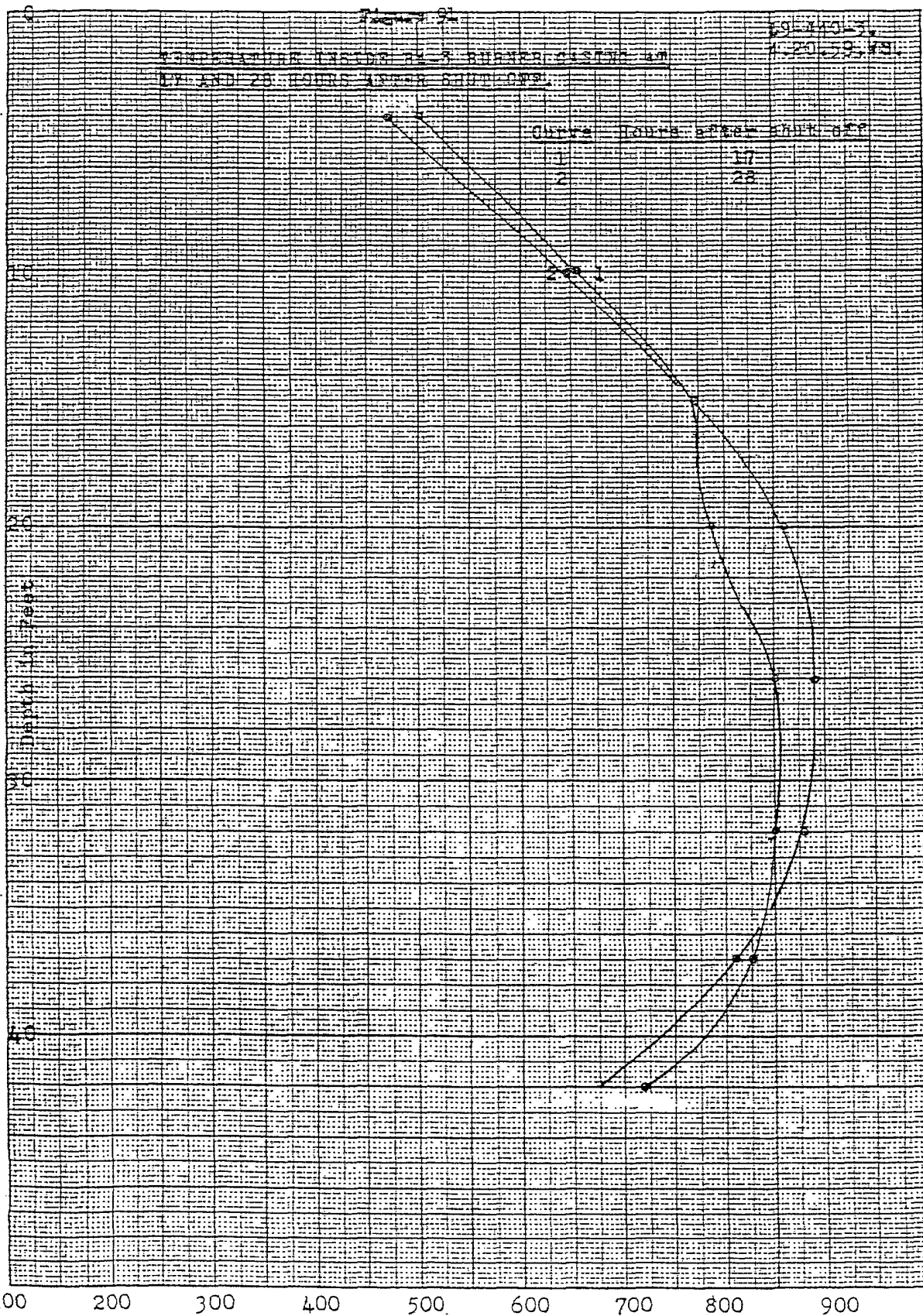
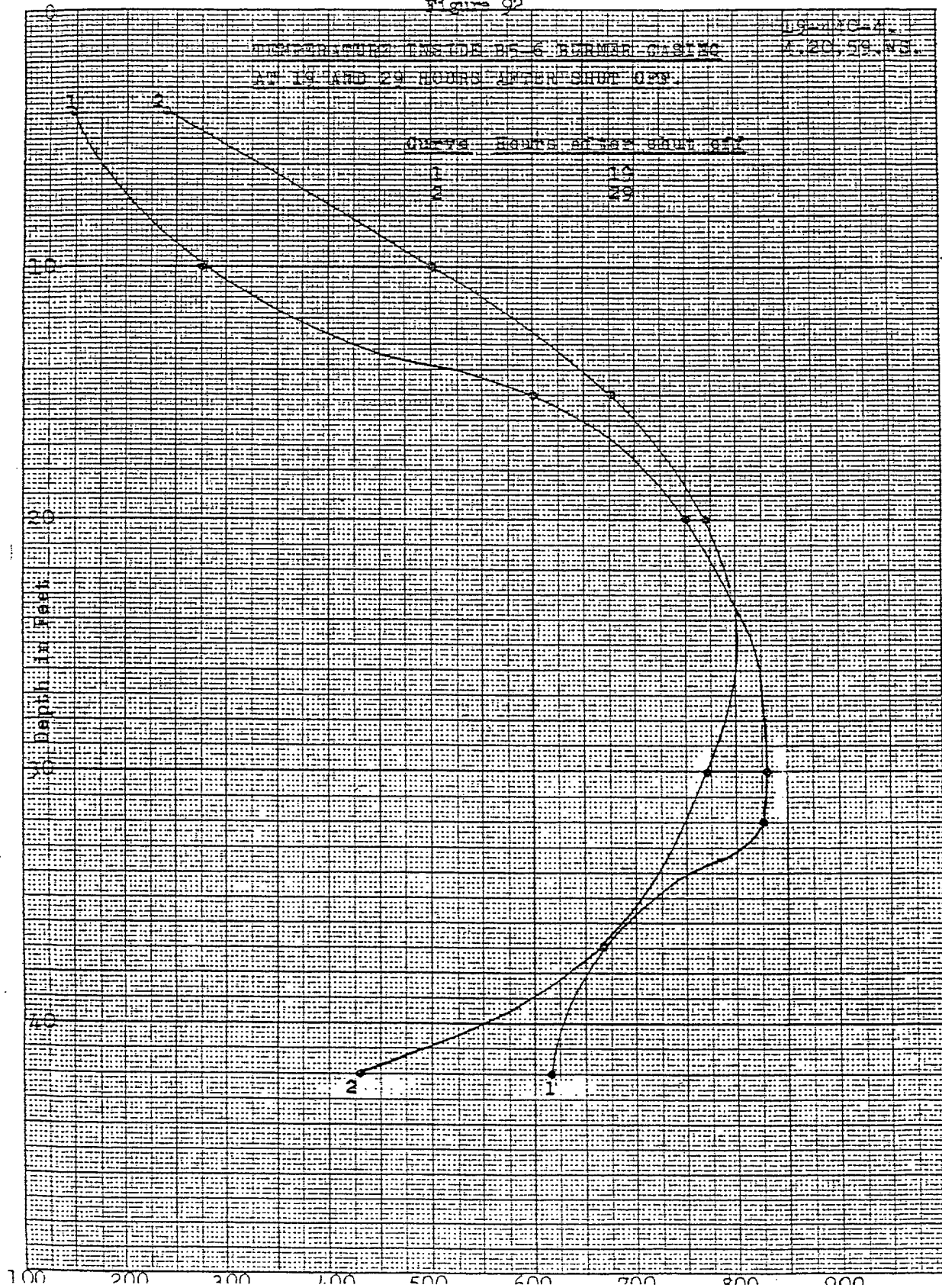


Figure 92

TEMPERATURE INSIDE OF 6 INCH CASTING
AT 19 AND 29 HOURS AFTER SHOT OFF

GRAPHIC-4
A. 20, 59, 83.

| CURVE | HOURS AFTER SHOT OFF |
|-------|----------------------|
| 1 | 19 |
| 2 | 29 |



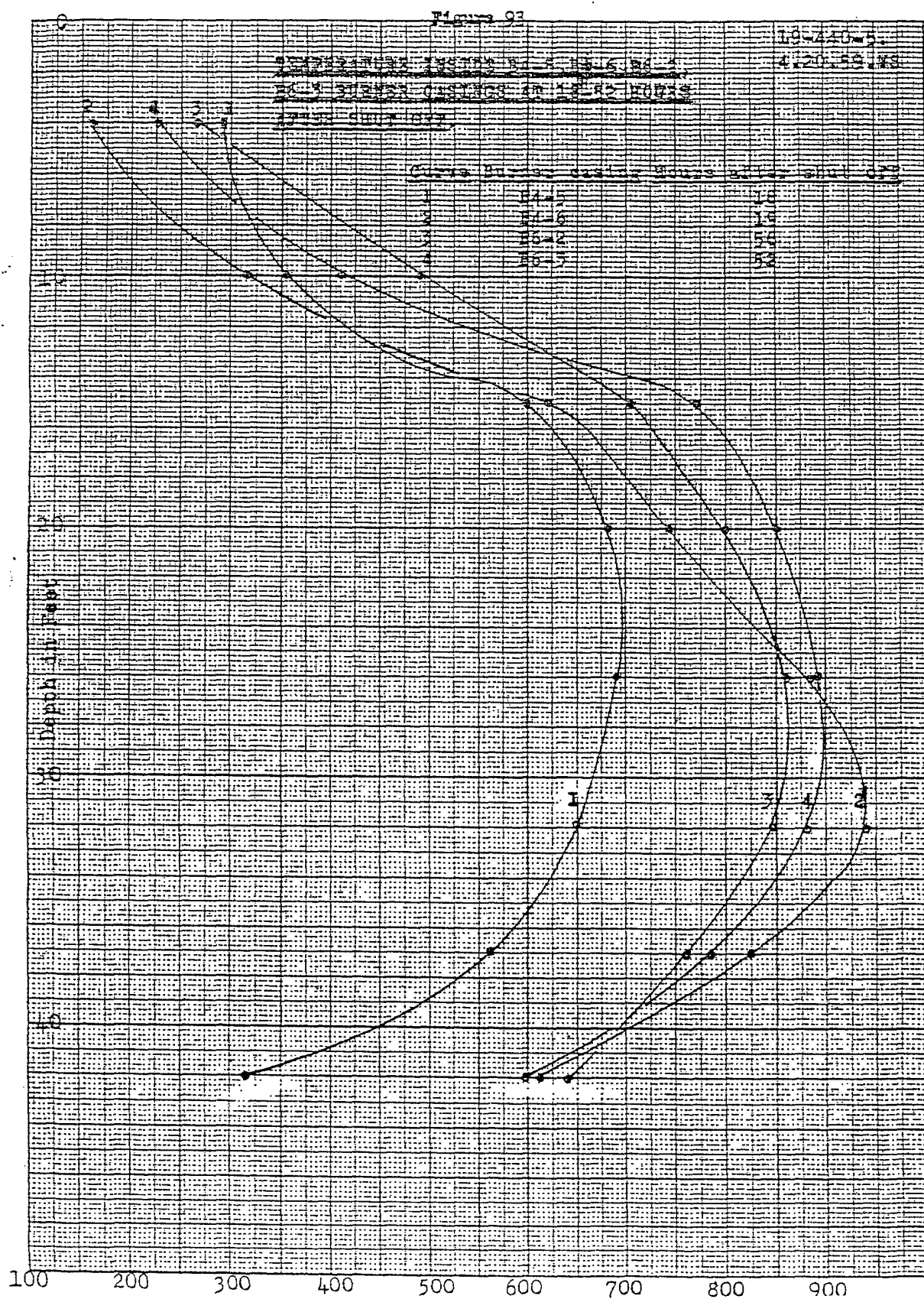


Figure 24

TEMPERATURE INSIDE B6-6, B7-6, B7-7
PUSHER CASINGS AT 72-50 HOURS AFTER
3. SHUT OFF

20-440-6
4.20.59.KS.

Curve Number: casing hours after shut off

| | | |
|---|------|----|
| 1 | 36-5 | 32 |
| 2 | 37-5 | 34 |
| 3 | 37-5 | 50 |

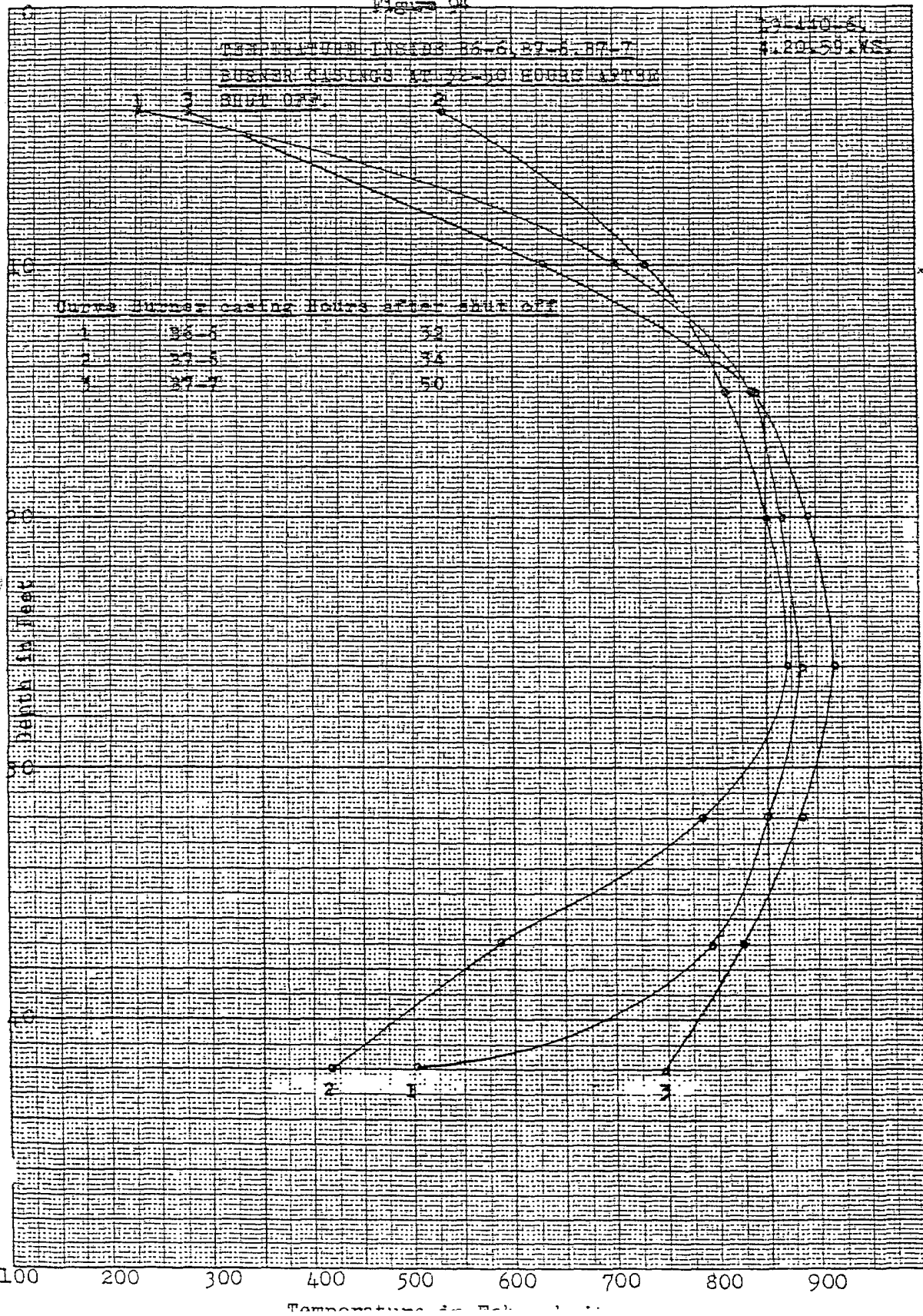


Figure 95

TEMPERATURE INSIDE BT-1, BT-2, BT-3,

BT-10 BURNER CASTING UNIT AT 1000°C

AT 1000°C

10-450-7

1-20-55-45

Curve Number Reading Point after 1000°C

| | | |
|---|-------|----|
| 1 | BT-1 | 50 |
| 2 | BT-2 | 54 |
| 3 | BT-3 | 52 |
| 4 | BT-10 | 51 |

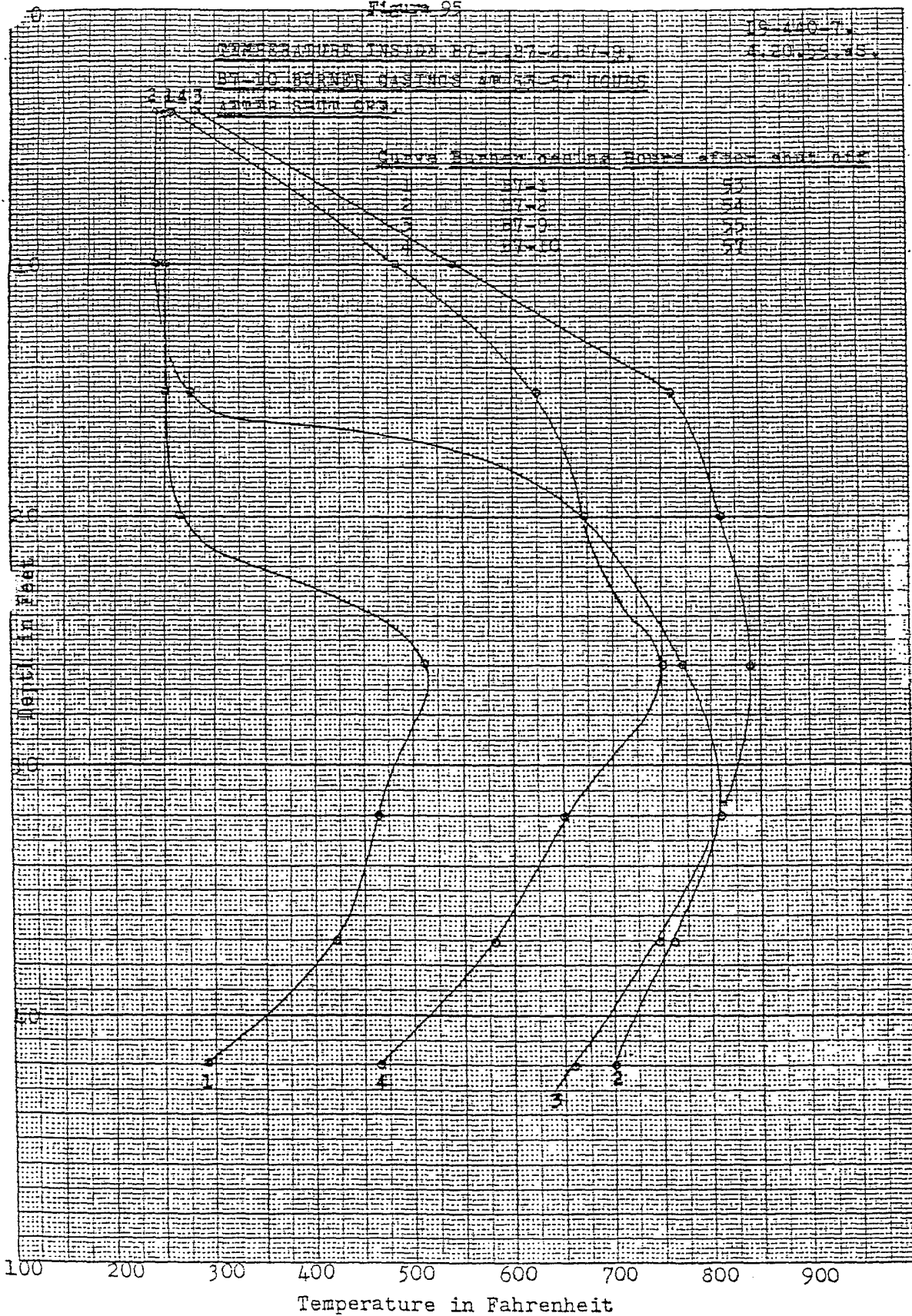


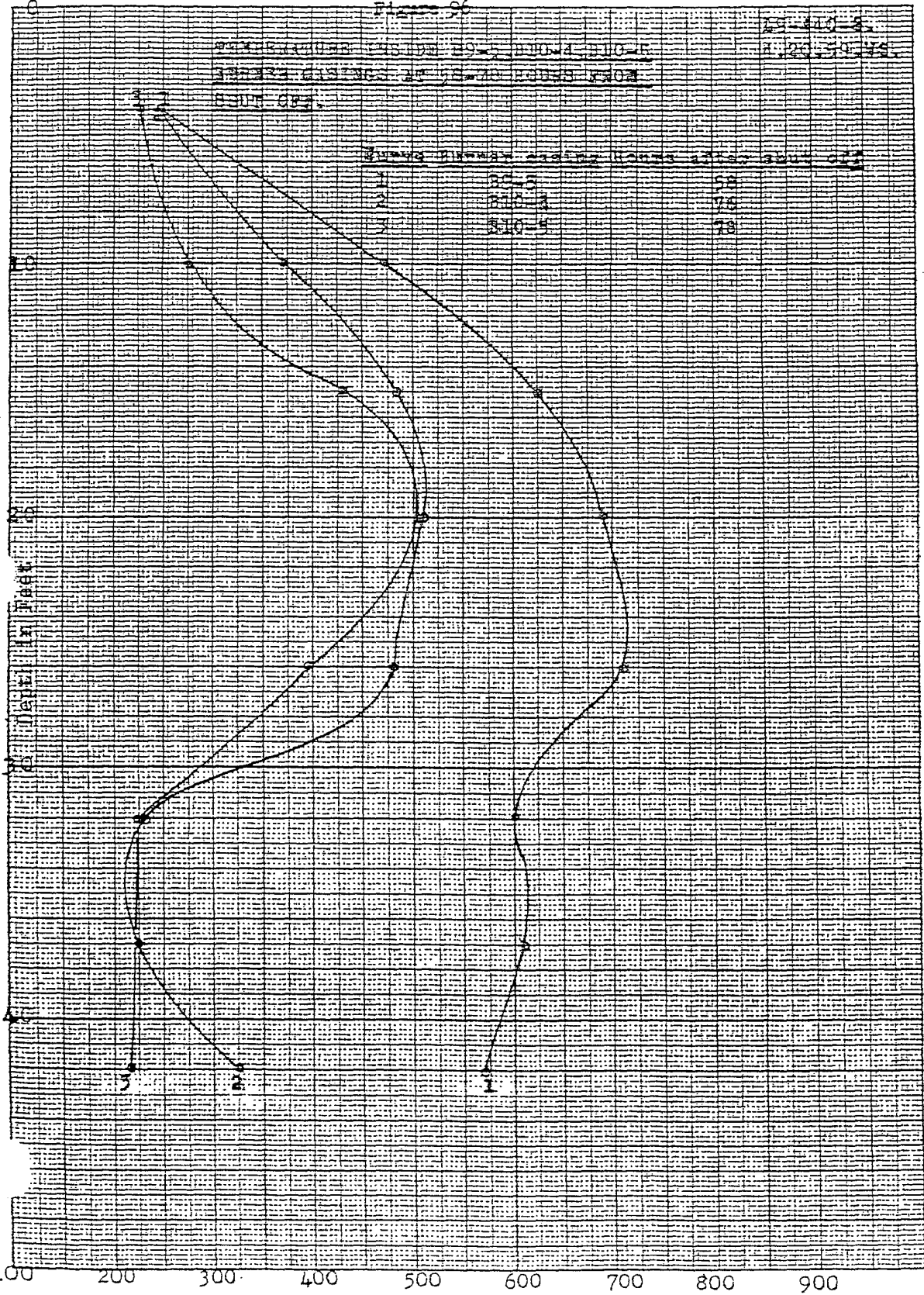
Figure 56

EXPERIMENTAL DATA FOR DUNE 4 DUNE 5
 MEASURED AT 15-40 FATHOMS FROM
 SHIP GUY.

25-410-8
 2-20-59-75.

Approximate location of points after about 100

| | | |
|---|-------|----|
| 1 | 85-5 | 58 |
| 2 | 810-3 | 75 |
| 3 | 810-4 | 78 |



100 200 300 400 500 600 700 800 900

6.17.59, HP

Figure 97

L9 HEAT BALANCE

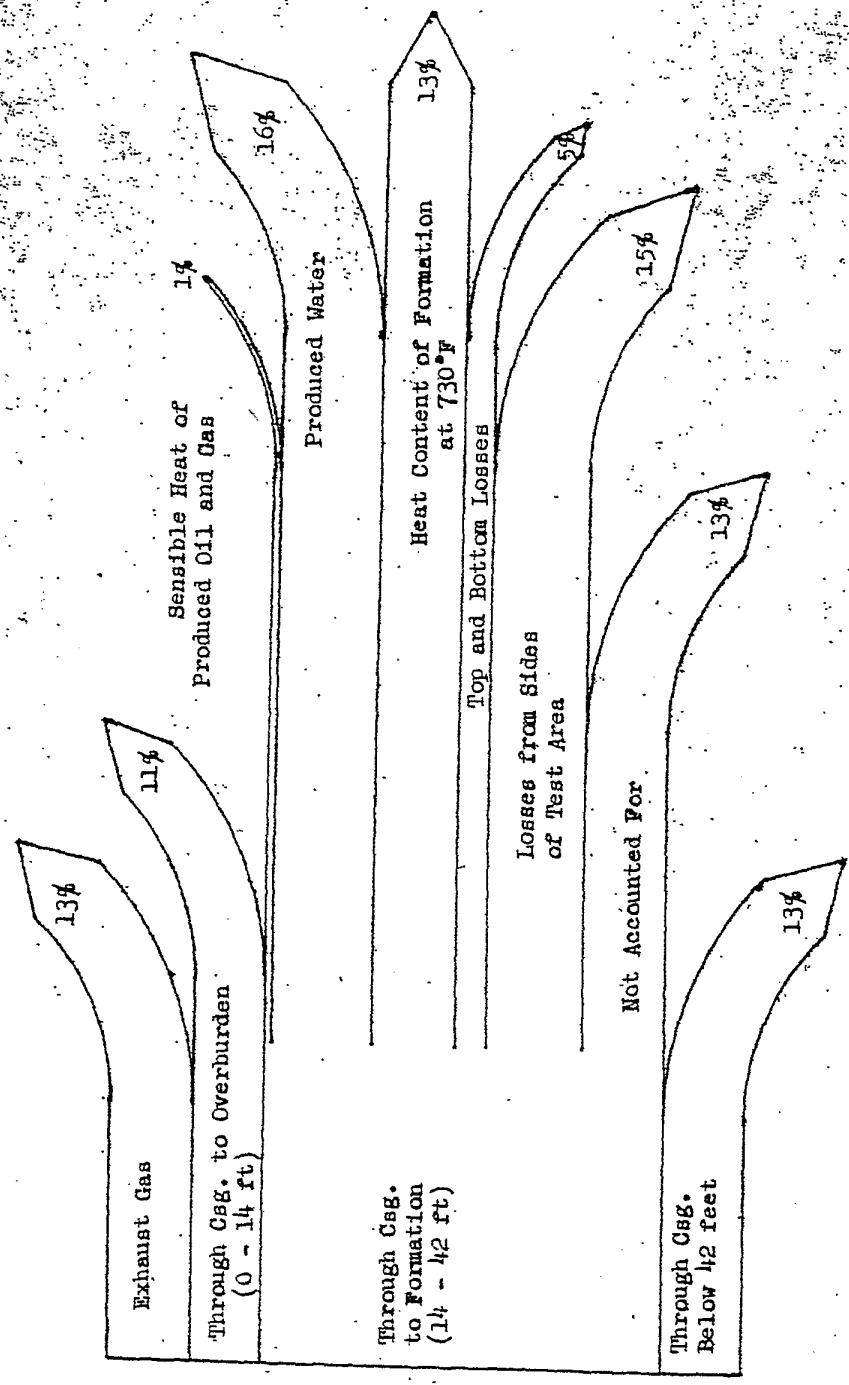
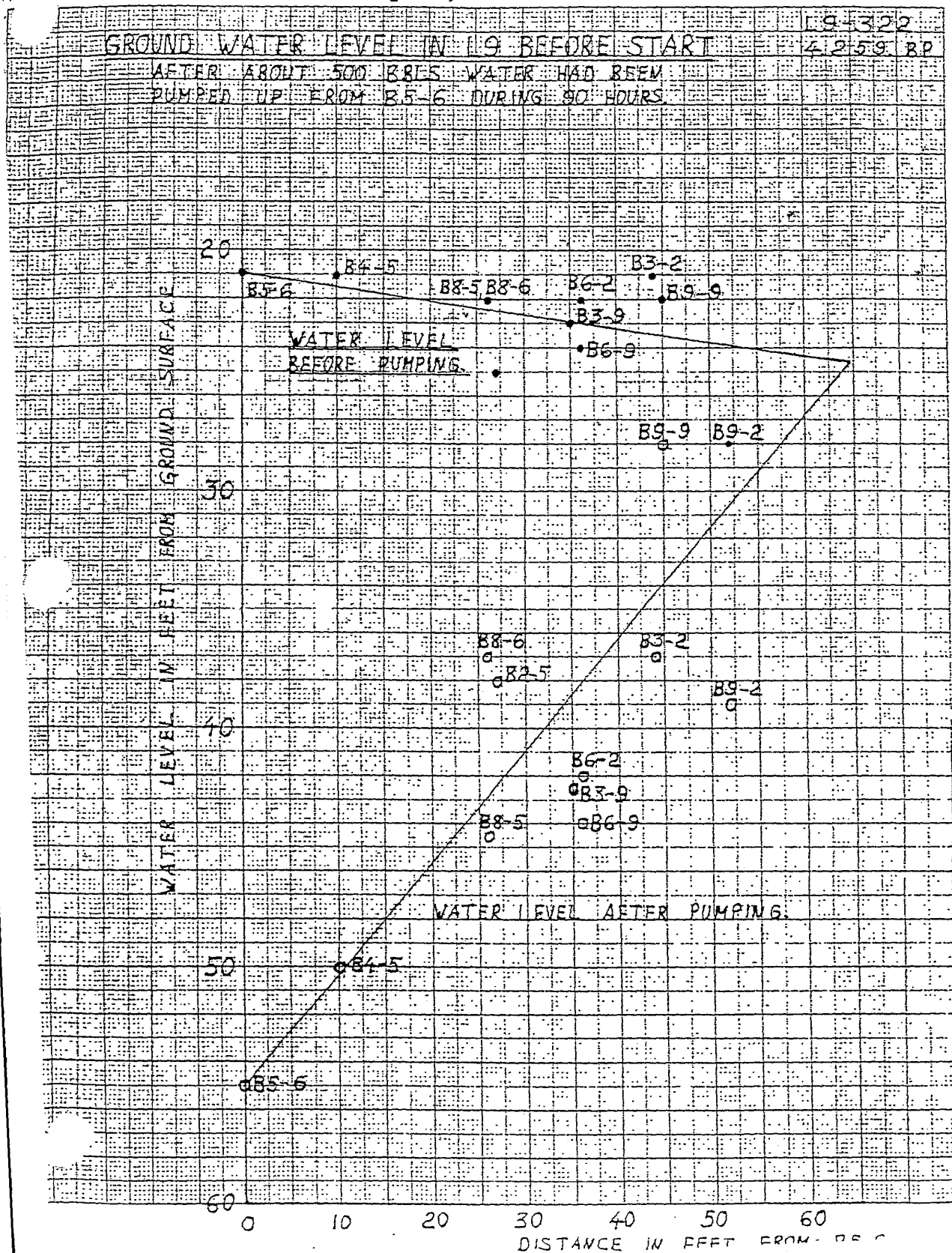


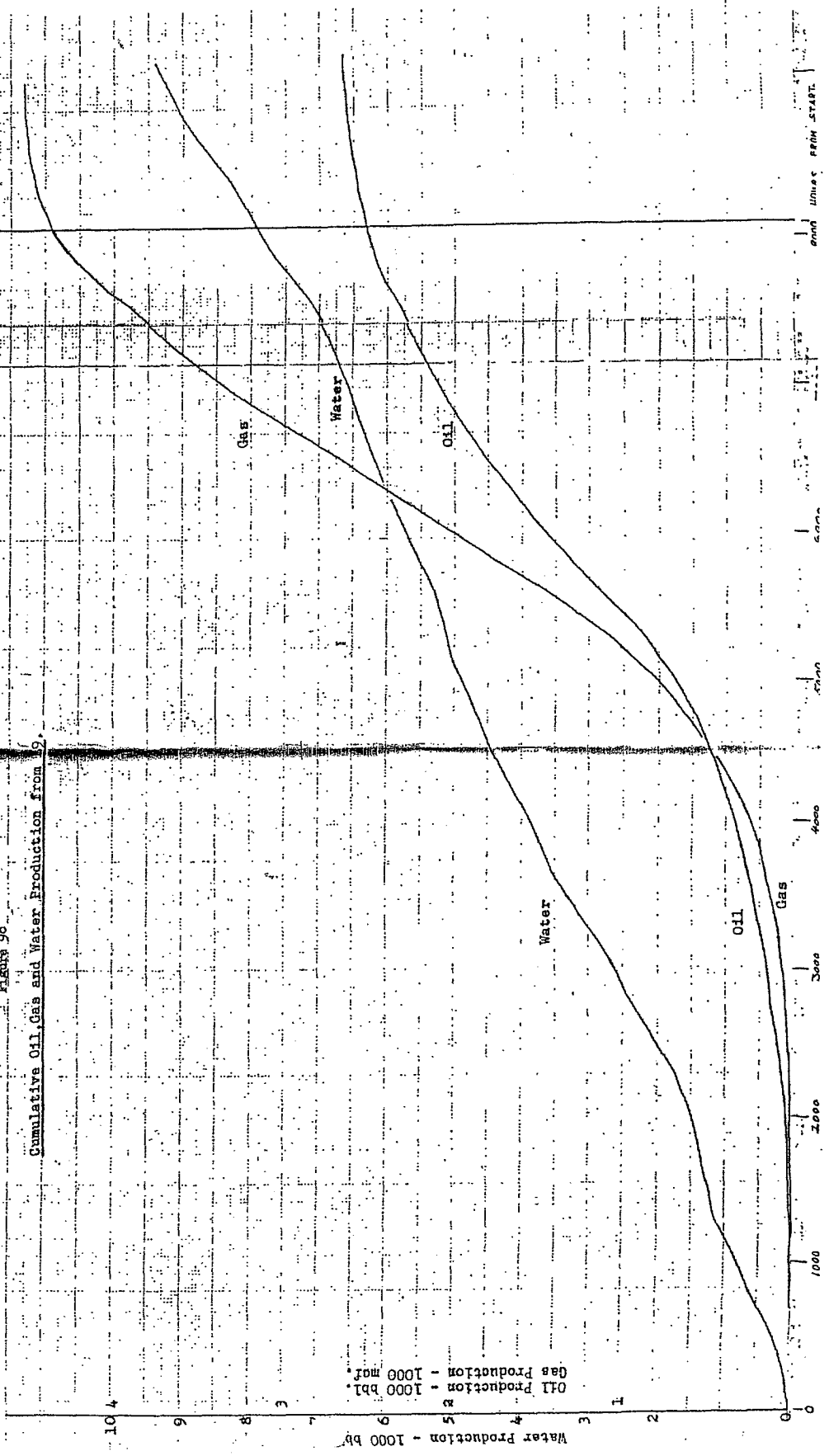
Figure 156

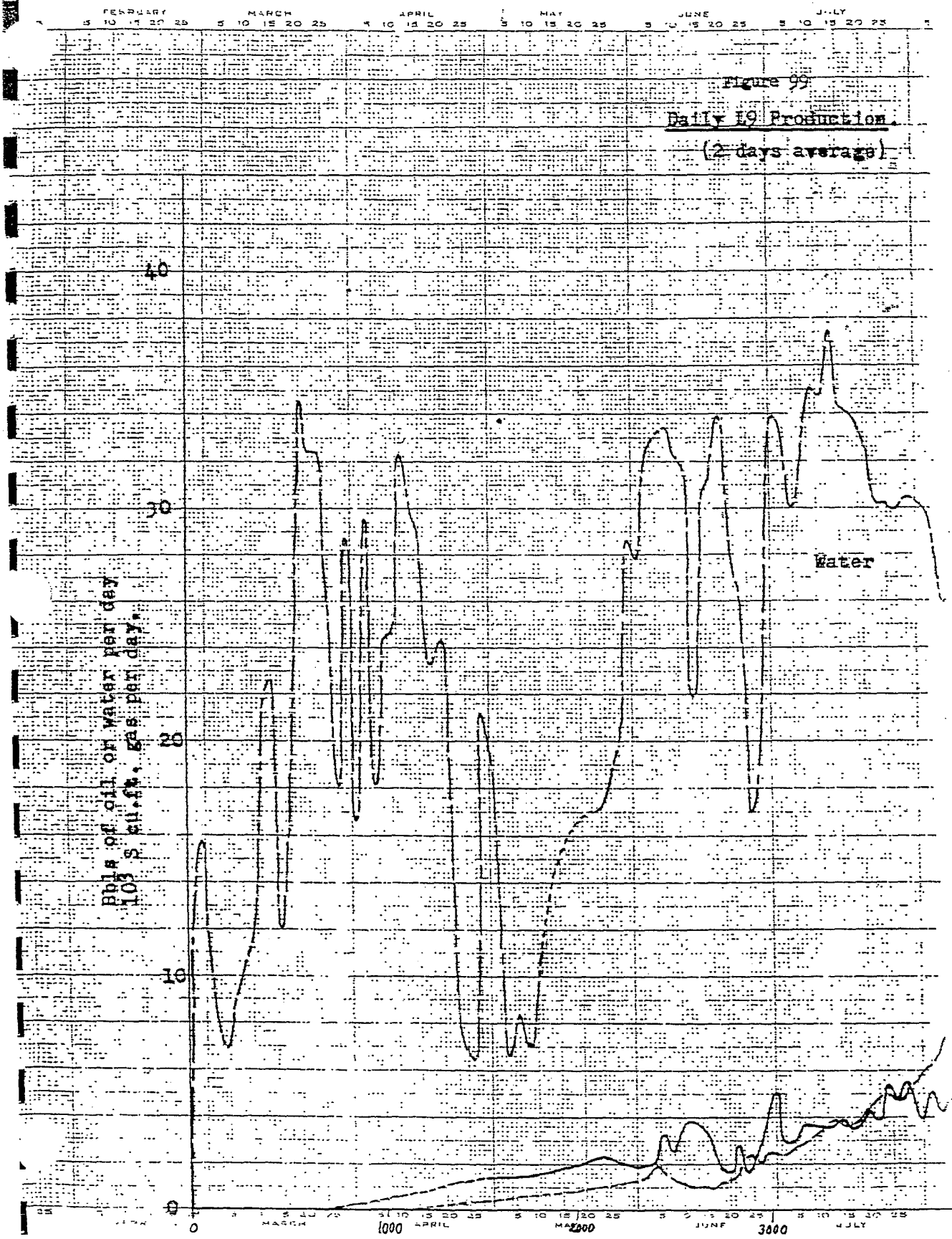


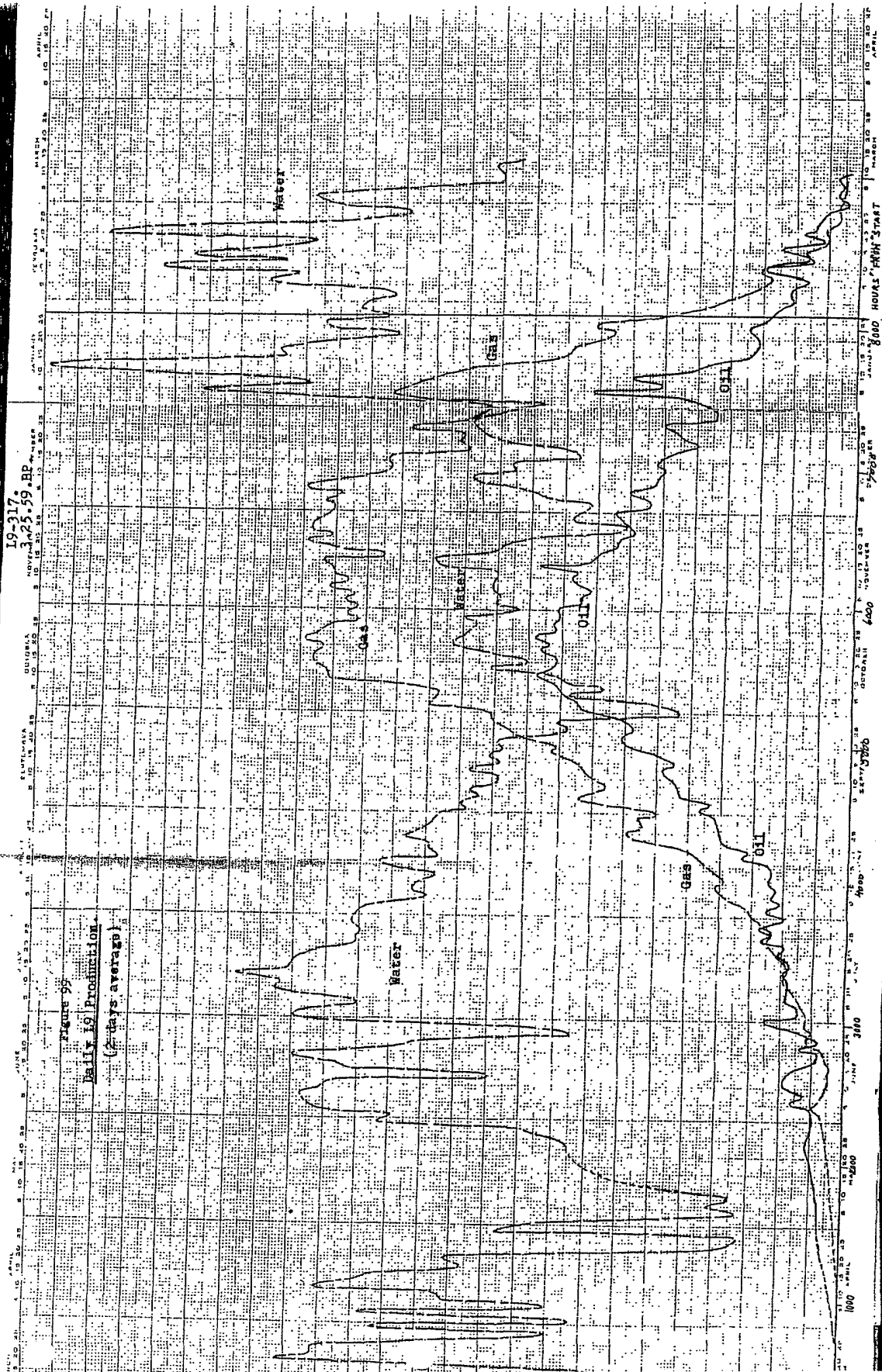
19-219
3-23-56 BP

Figure 98

Cumulative Oil, Gas and Water Production from 9.



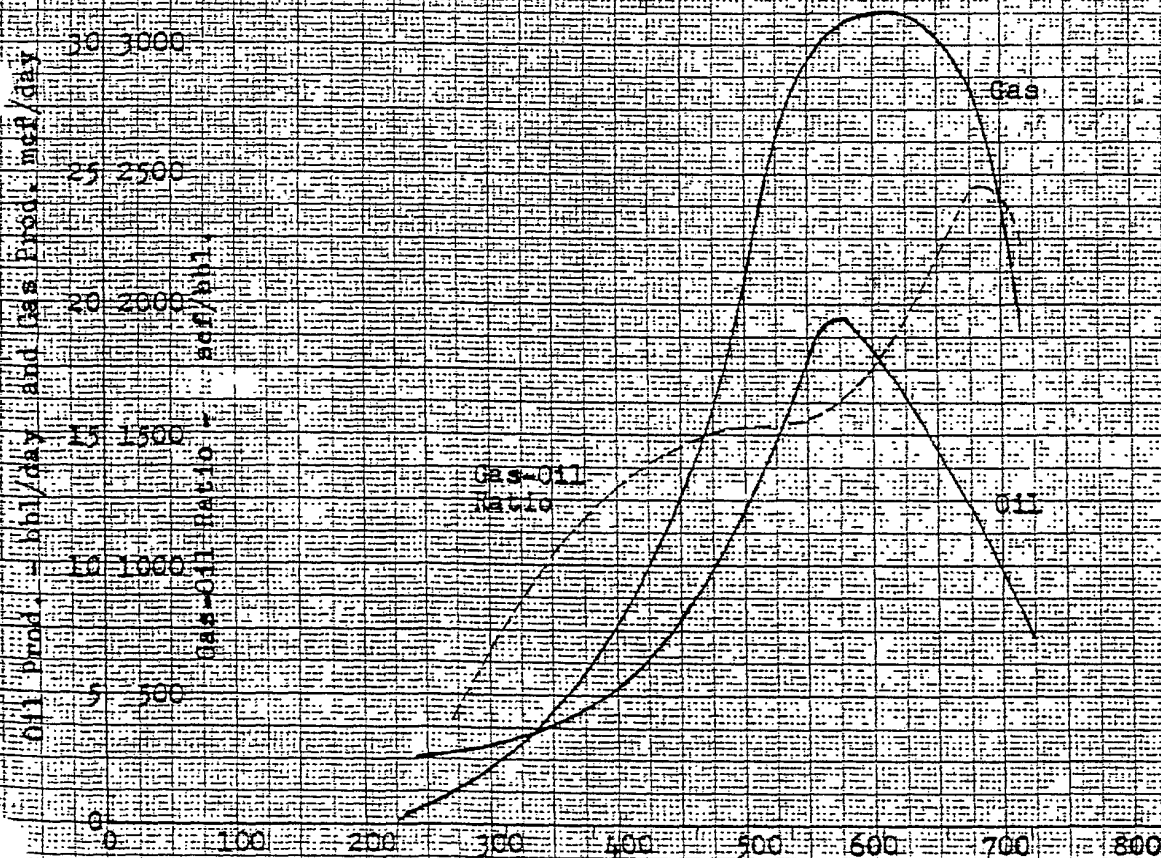




19-705
5-16-59 RH

Figure 100

L9 PRODUCTION RATES VS. FORMATION TEMPERATURES



Average Temperature from 14 to 42 feet, Midway between burners - 2 ft.

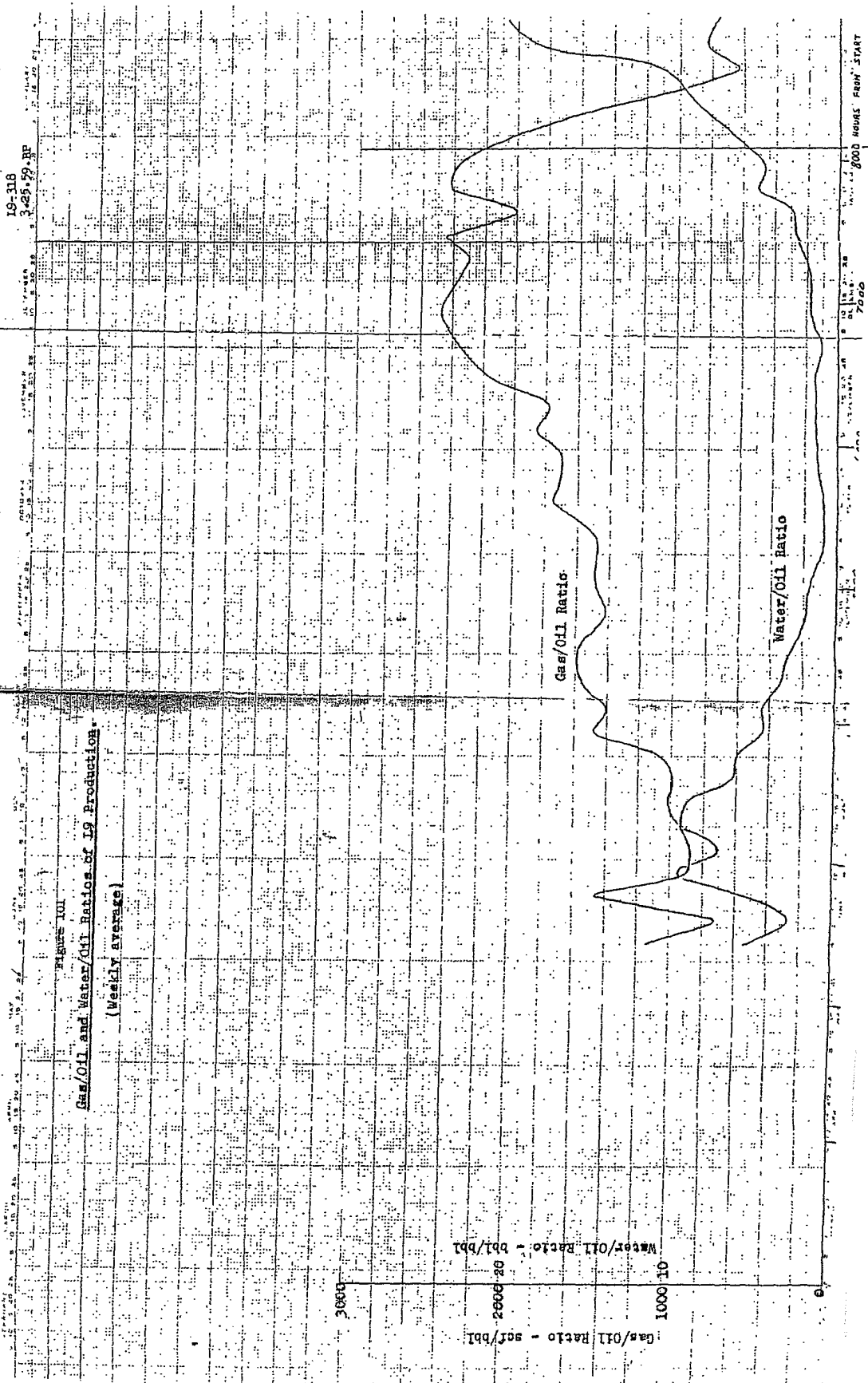
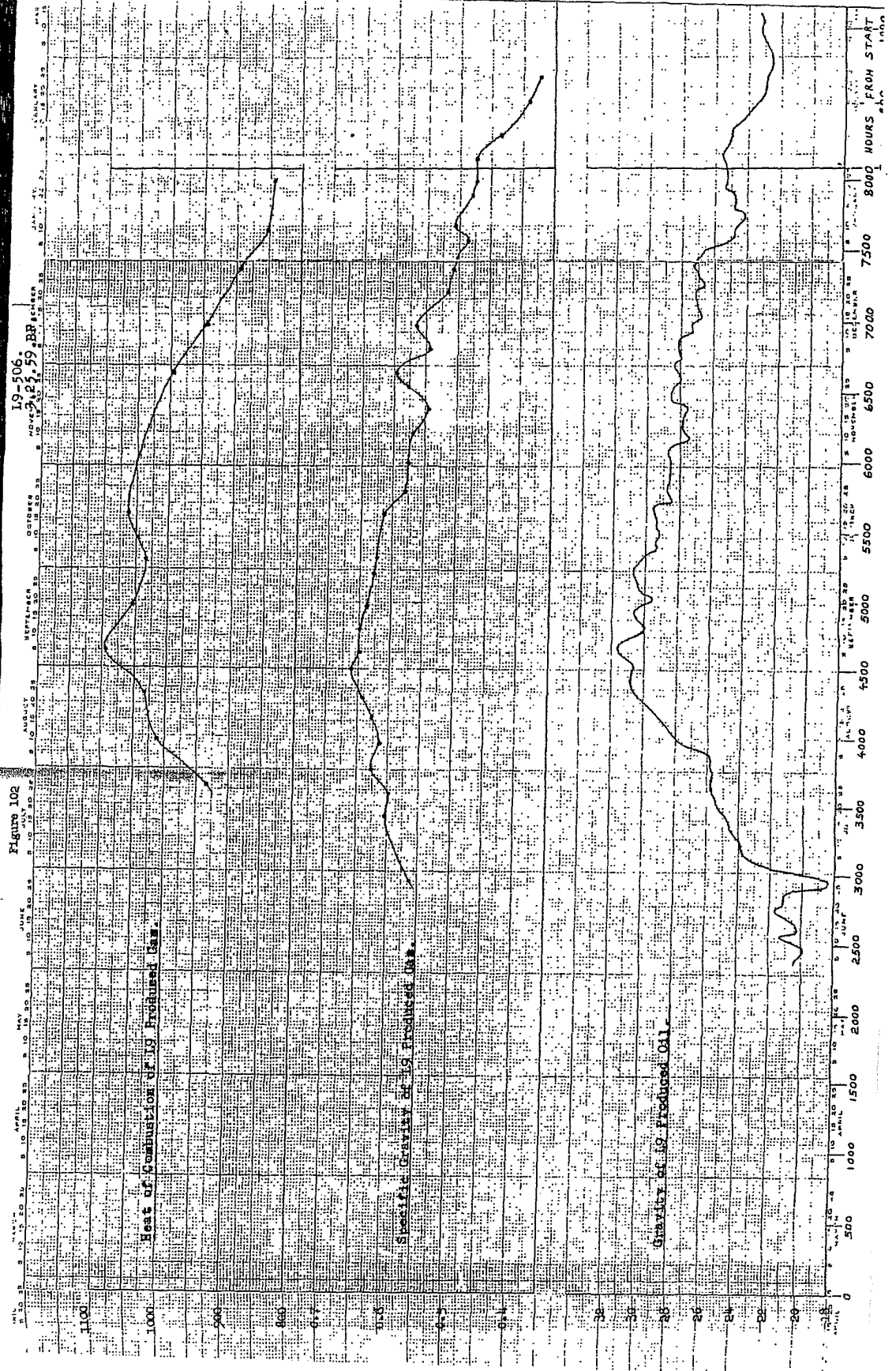


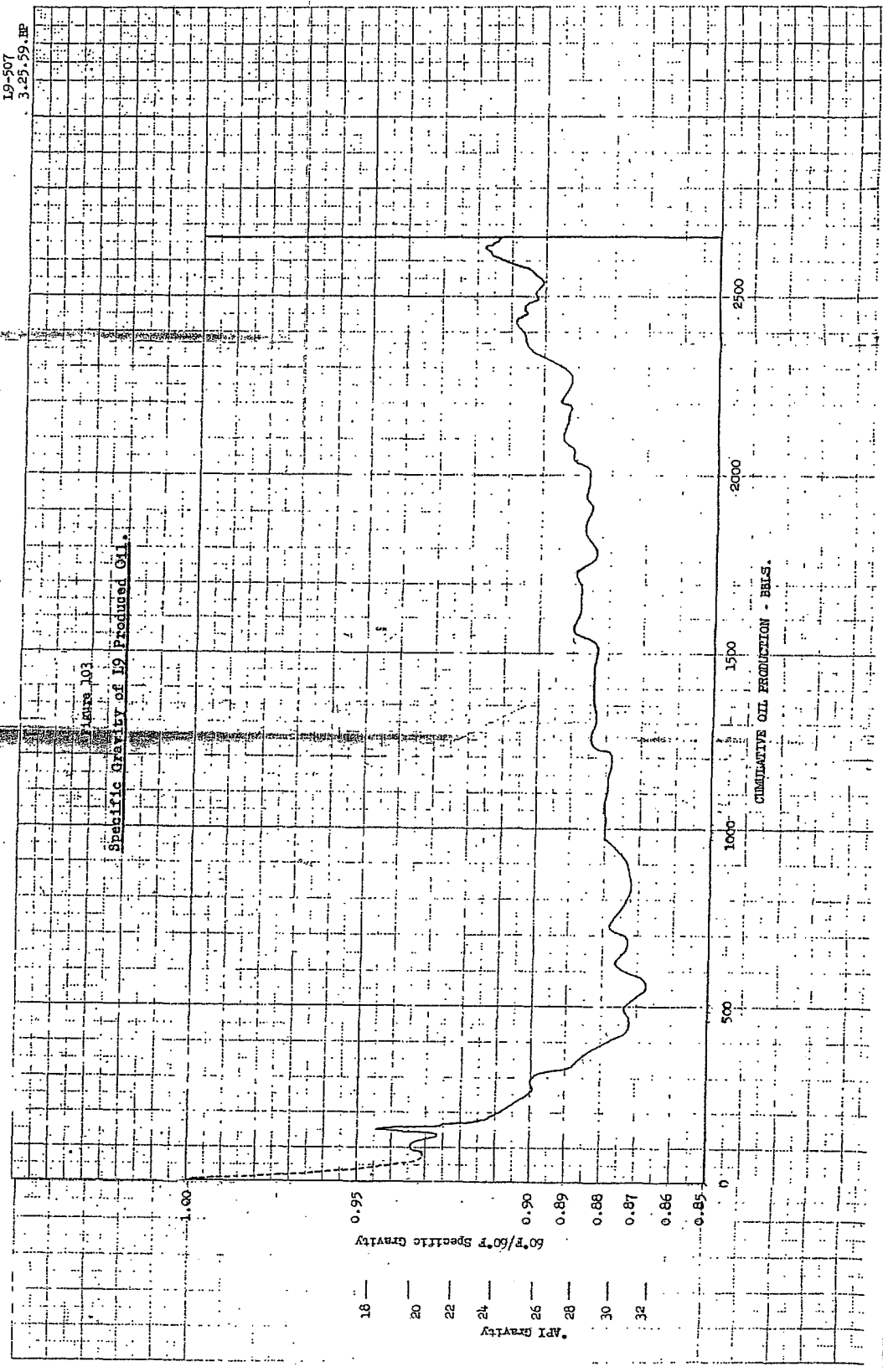
Figure 102



19-507
3-25-59 BP

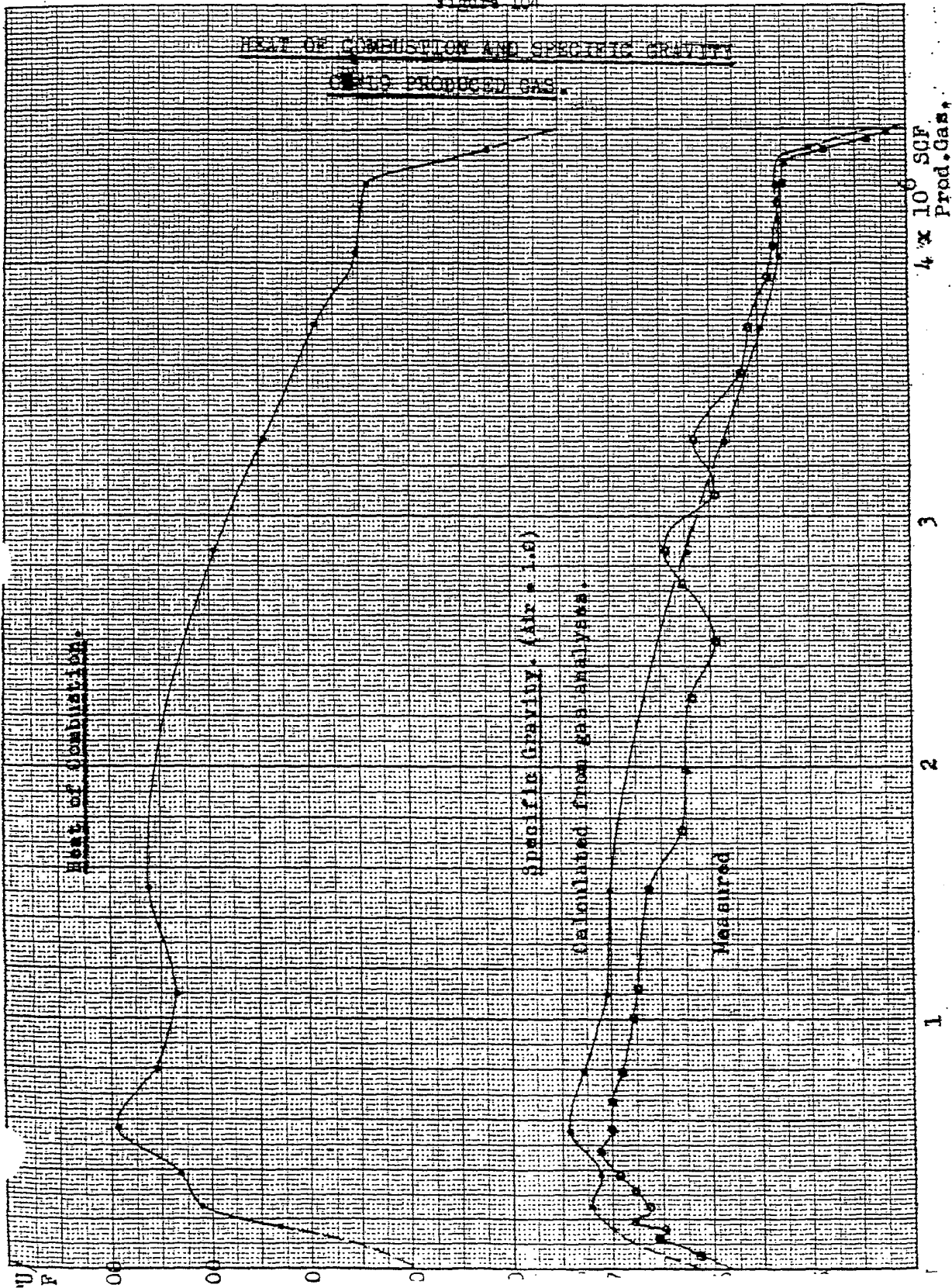
Curve 103

Specific Gravity of 19 Produced Oil.



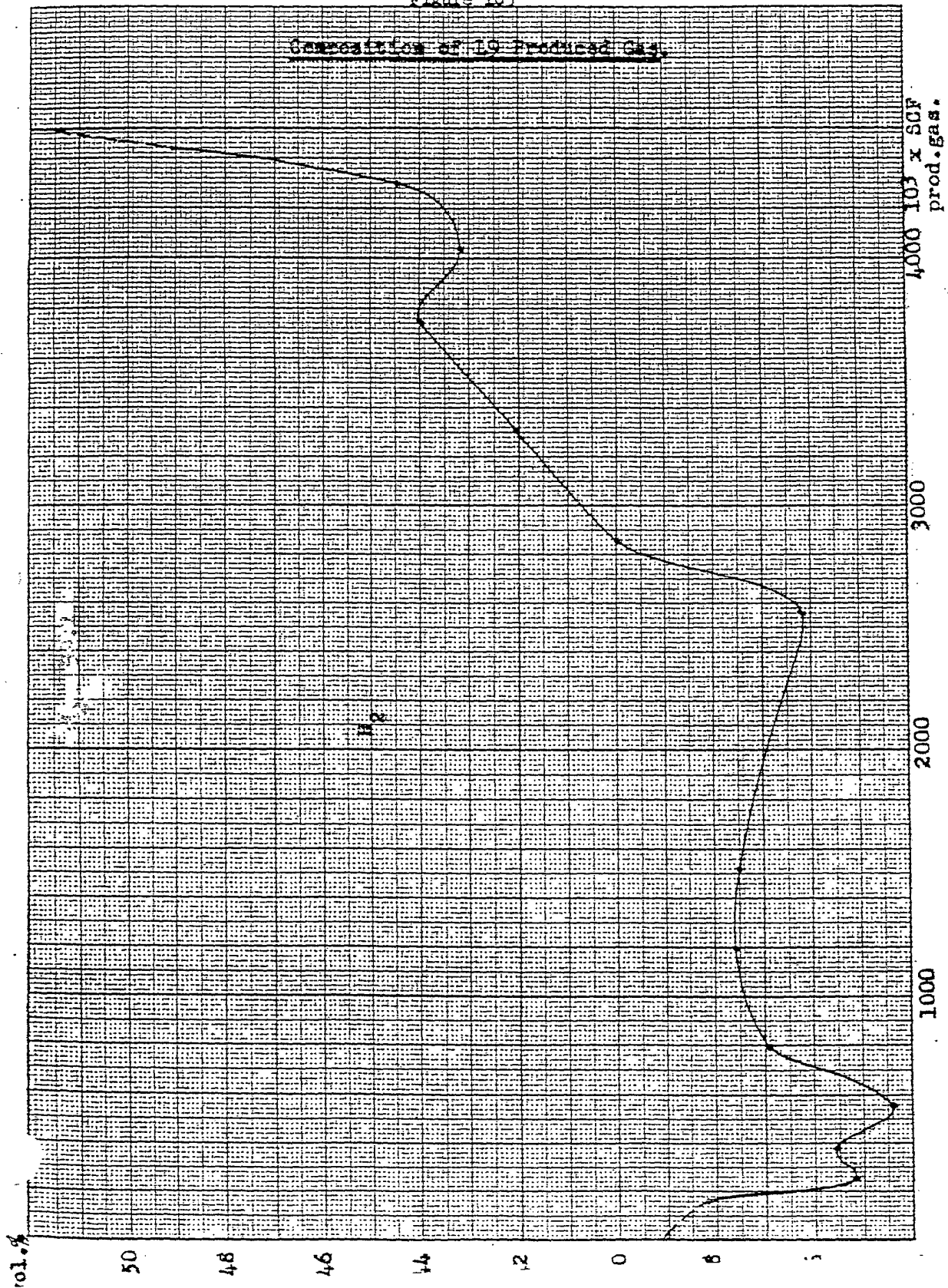
L9-509.
3.25.59.BP.

Figure 104



L9-508-1.
3.25.59.BP.

Figure 105



L9-508-2.
3.25.59.BP.

Figure 106

Composition of L9 Produced Gas.

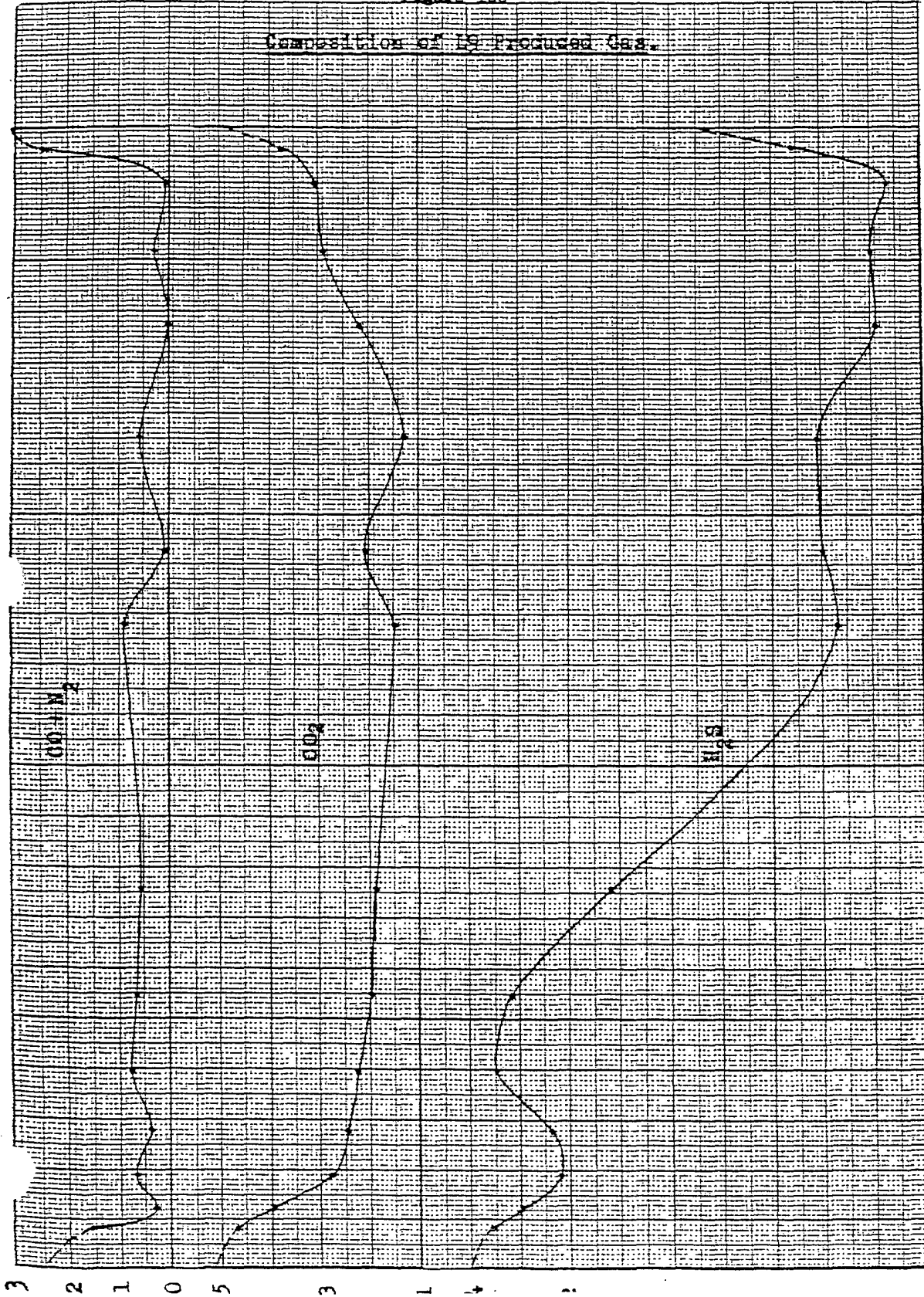
4000
3000
2000
1000
0
-1
-2
-3

prod. gas.

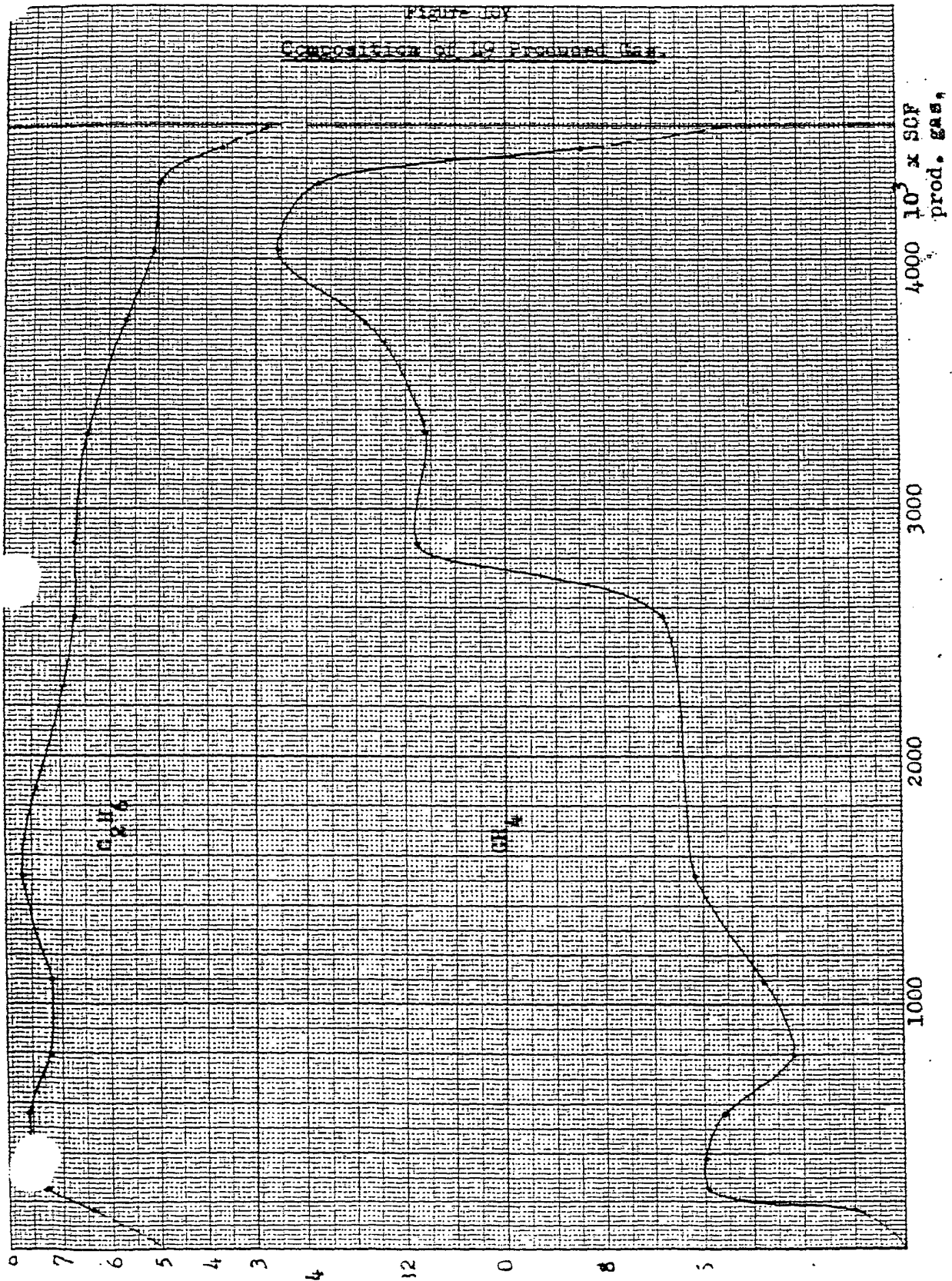
3000

2000

1000

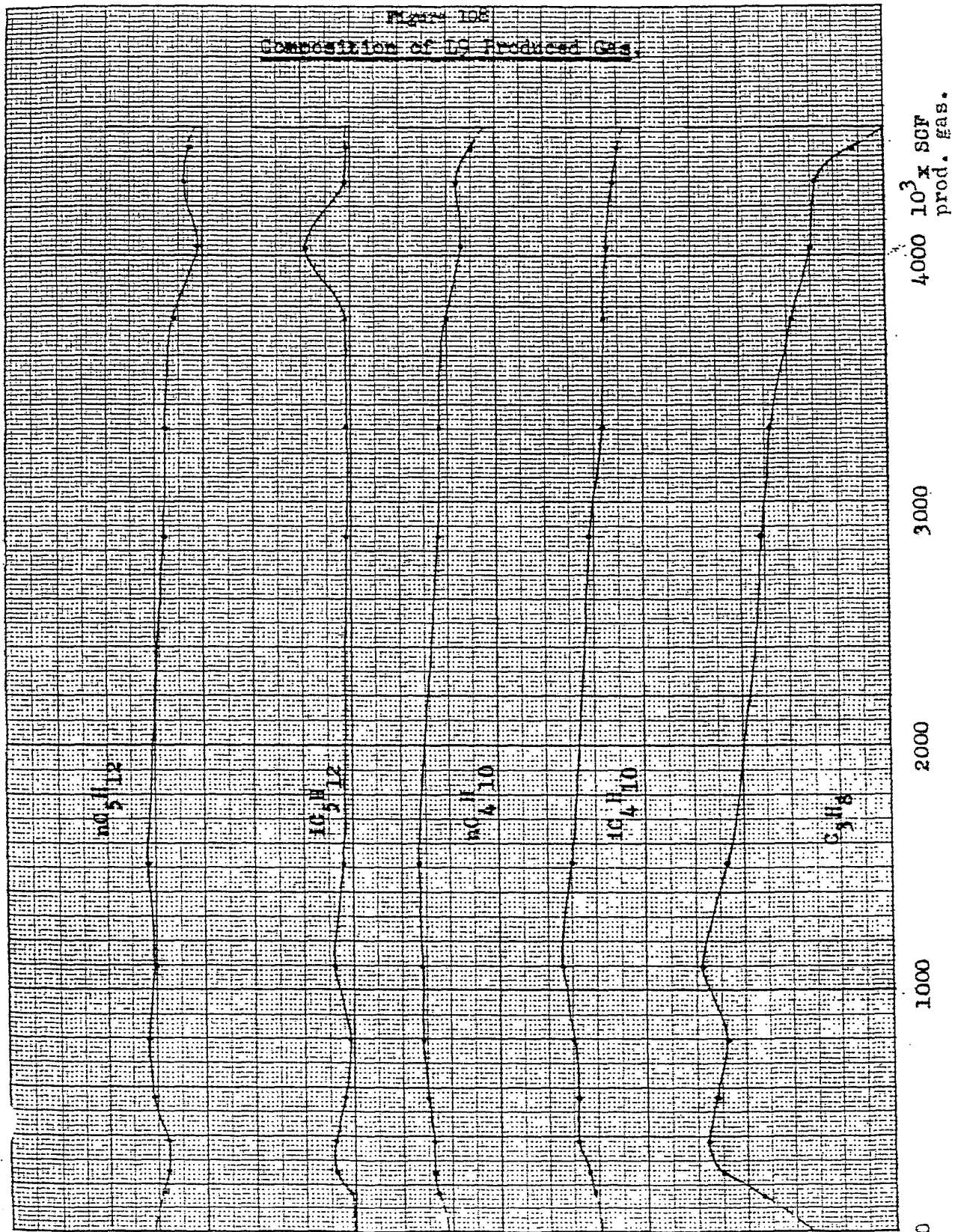


19-508-3.
3.25.59.BP.



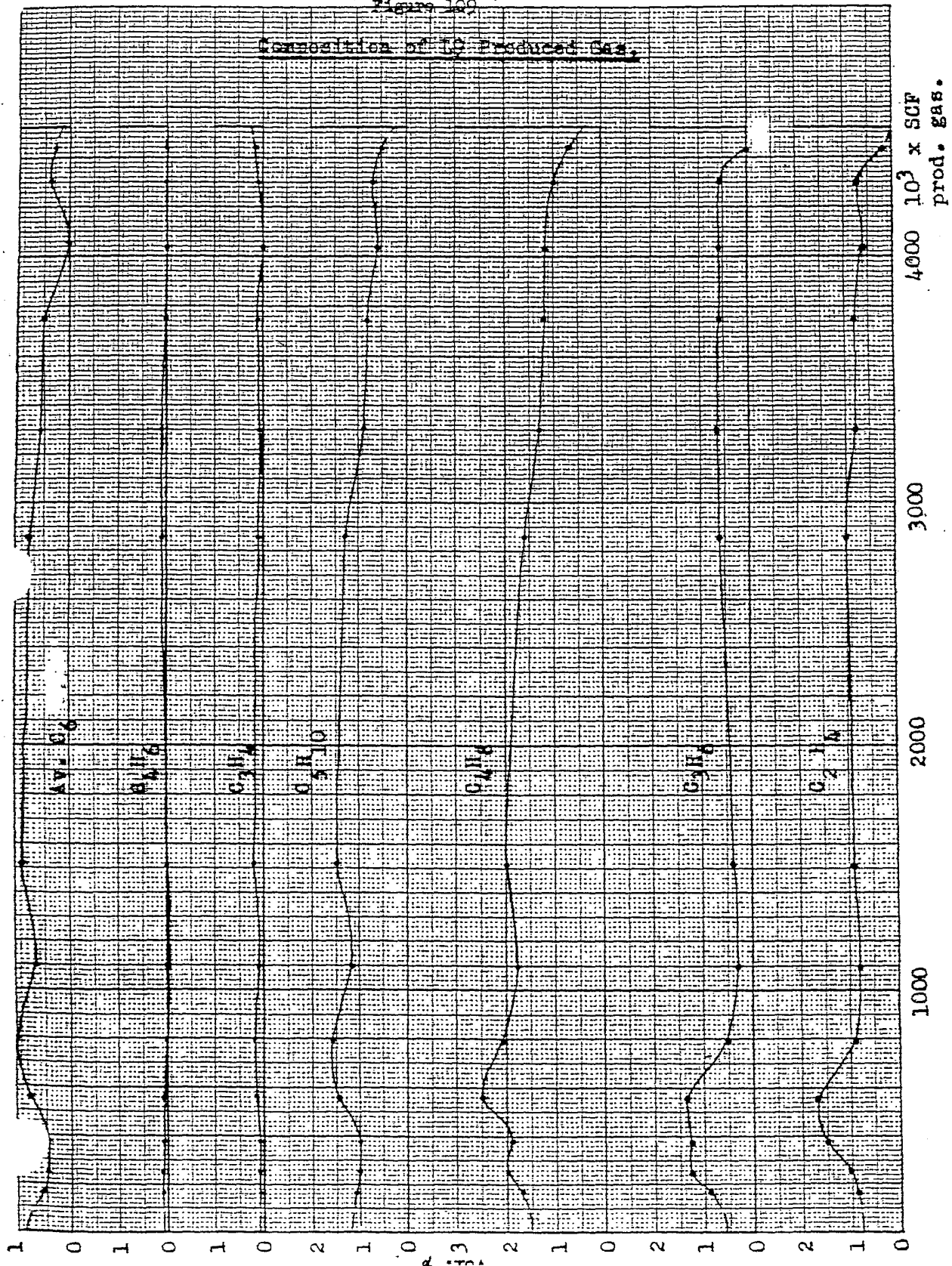
L9-508-4.
3.25.59.BP.

Figure 108
Composition of L9 Produced Gas.



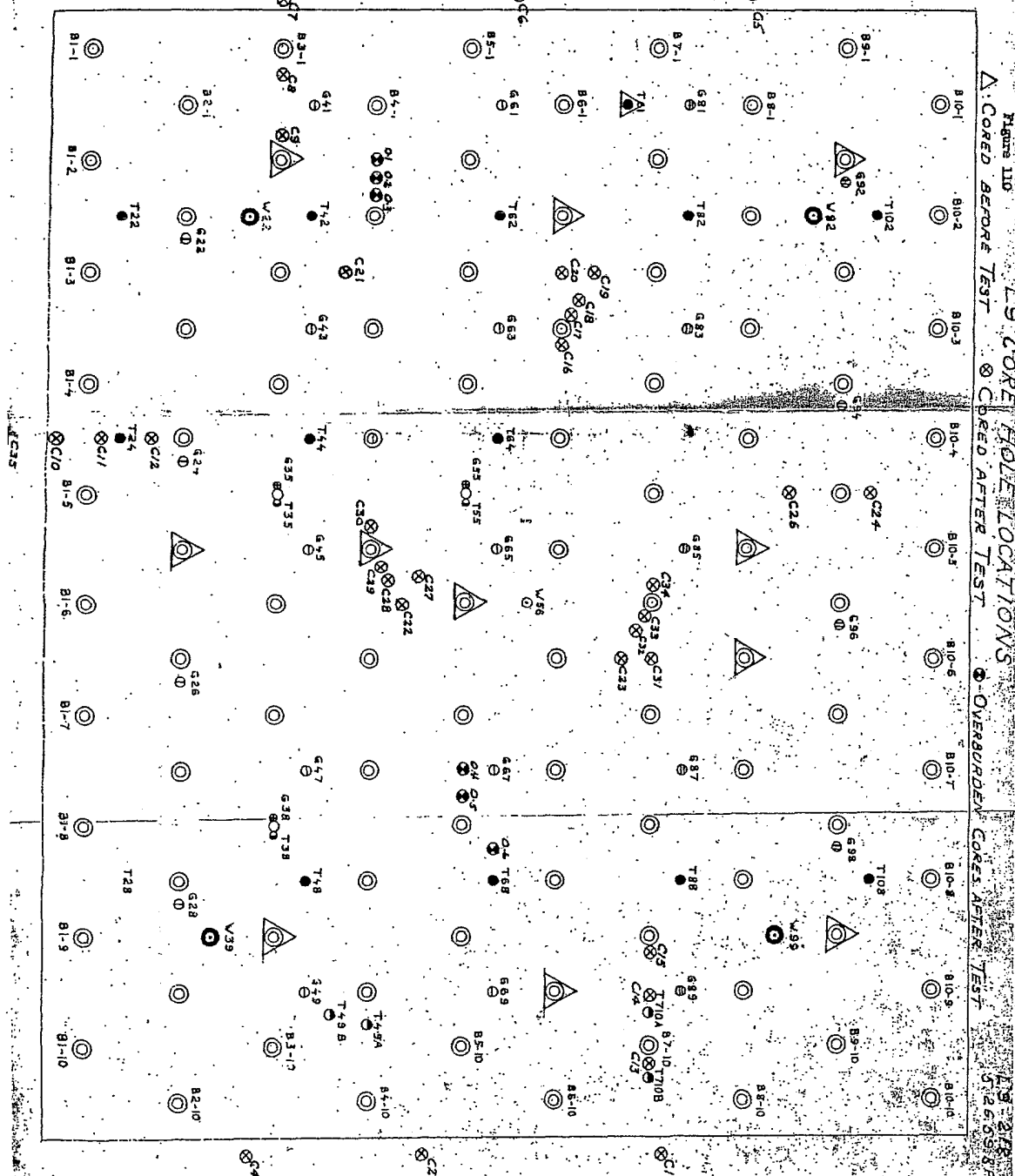
L9-508-5.
3.25.59.BP.

~~Page 109~~



L9-101.
JAN. 21 1958. 89
REVISED 3-15-58. 21

- BURNER, 15' 5 5/8" AND 40' 4 3/4" HOLE, 52' 2 1/2" CASING.
 ◎ CONCENTRIC GASWELL AROUND BURNER, 13' 4 50"-4 22" CASING.
 ● SEPARATE GASWELL IN BURNERHOLE, 15' 1 1/2" CASING.
 ○ " " 2' FROM ADJACENT BURNER, 20' 3 3/4" HOLE, 15' 1 1/2" CASING.
 ⊖ " " 5'9" " " " "
 ⊕ " " 2' " " " 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15'. 15' 1 1/2" CASING.
 ⊖ " " 5'9" " " " "
 ○ CONCENTRIC GASWELL AROUND WATER WELL, 15' 4 50"-4 22" CASING.
 ◎ WATER WELL, 5'9" FROM ADJ. BURNER, 55' 5 5/8" HOLE, 50' 1 1/2" TUBING. W56: 75' 5 5/8" HOLE, 40' 3 1/2" AND 10' 4" TUBING.
 ● TEMPERATURE WELL, 5'9" FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.
 ● " " IN BURNERHOLE, 52' 1" CASING.
 ● " " 3'(T49B 4') FROM ADJACENT BURNER, 55' 3 3/4" HOLE, 52' 2" CASING.



L9 CORE HOLE LOCATIONS

Figure 110

| <u>Core Hole No.</u> | <u>Locations</u> |
|--------------------------|---|
| C1 | 10' N. of B7-10 then 1' west |
| C2 | 10' N. of B5-10 then 4' - 4" west |
| C3 | 7' N. of C2 |
| C4 | 10' N. of B3-10 then 2' - 4" east |
| C5 | 10' S. of B8-1 |
| C6 | 10' S. of B6-1 then 4' - 4" east |
| C7 | 5' S. of B3-1 |
| C8 | 2' N. of B3-1 (between B3-1 and B3-2) |
| C9 | 2'-3-1/2" S. of B3-2 (-") |
| C10 | 11'-5-1/2" E. of B2-4 |
| C11 | 7'-10-1/2" E. of B2-4 |
| C12 | 3'-8" E. of B2-4 (between B2-4 and T24) |
| C13 | 1'-5" N. of B7-10 |
| C14 | 4'-6" S. of B7-10 (between B7-10 and B7-9) |
| C15 | 1'-1-1/2" N. of B7-9 (-") |
| C16 | 10" N. of B6-3 |
| C17 | 1'-5" from B6-3 towards B7-2 |
| C18 | 2'-11" " " " " |
| C19 | 5'-9" " " " " (between B6-2, 6-3, 7-3) |
| C20 | 5' S. of B6-3 (between B6-2 and B6-3) |
| C21 | Midway between B3-3, B4-2, and B4-3 |
| C22 | " " B4-5, B4-6, and B5-6 |
| C23 | " " B6-6, B7-6, and B7-8 |
| C24 | 2'-5-1/2" west of B9-5 |
| C25 | 3'-5" east of B9-5 |

L9 CORE HOLE LOCATIONS
Figure 110

| <u>Core Hole</u> <u>No.</u> | <u>Locations</u> |
|--------------------------------|------------------------------------|
| C26 | 4'-5" east of B9-5 |
| C27 | 5' from B4-5 between B4-5 and B5-6 |
| C28 | 2'-11" from B4-5 towards B5-7 |
| C29 | 1'-5" " " " " |
| C30 | 11" " " " B4-4 |
| C31 | 5' from B7-6 between B7-6 and B7-7 |
| C32 | 2'-11" from B7-6 towards B6-7 |
| C33 | 1'-5" " " " " |
| C34 | 10" to 12" from B7-6 towards B7-5 |
| C35 | 14'-7-1/2" east of B2-4 |

Figure 111

L9-215-1
5-19-59 RH

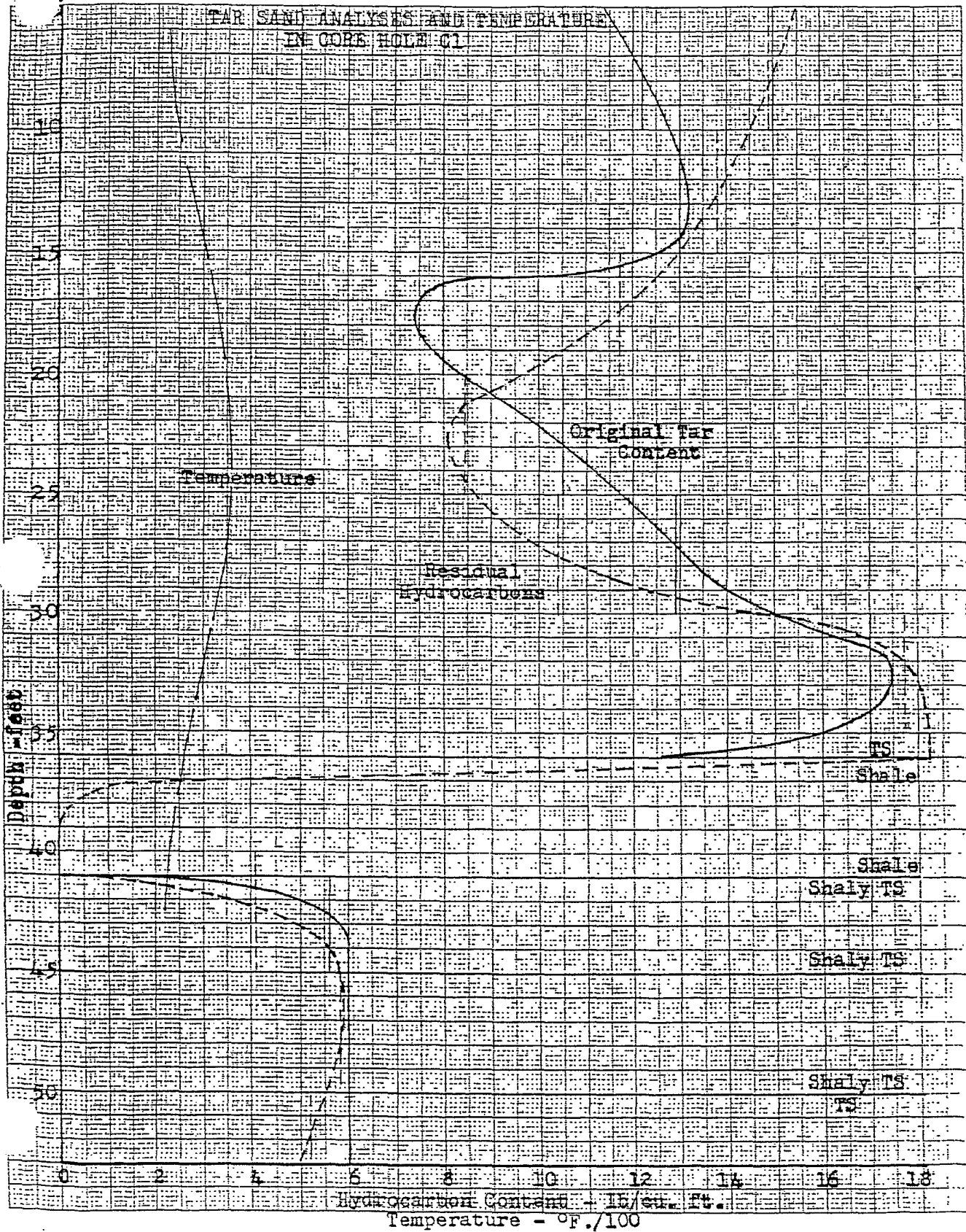


Figure 112

L9-215-2
5-21-59 RH

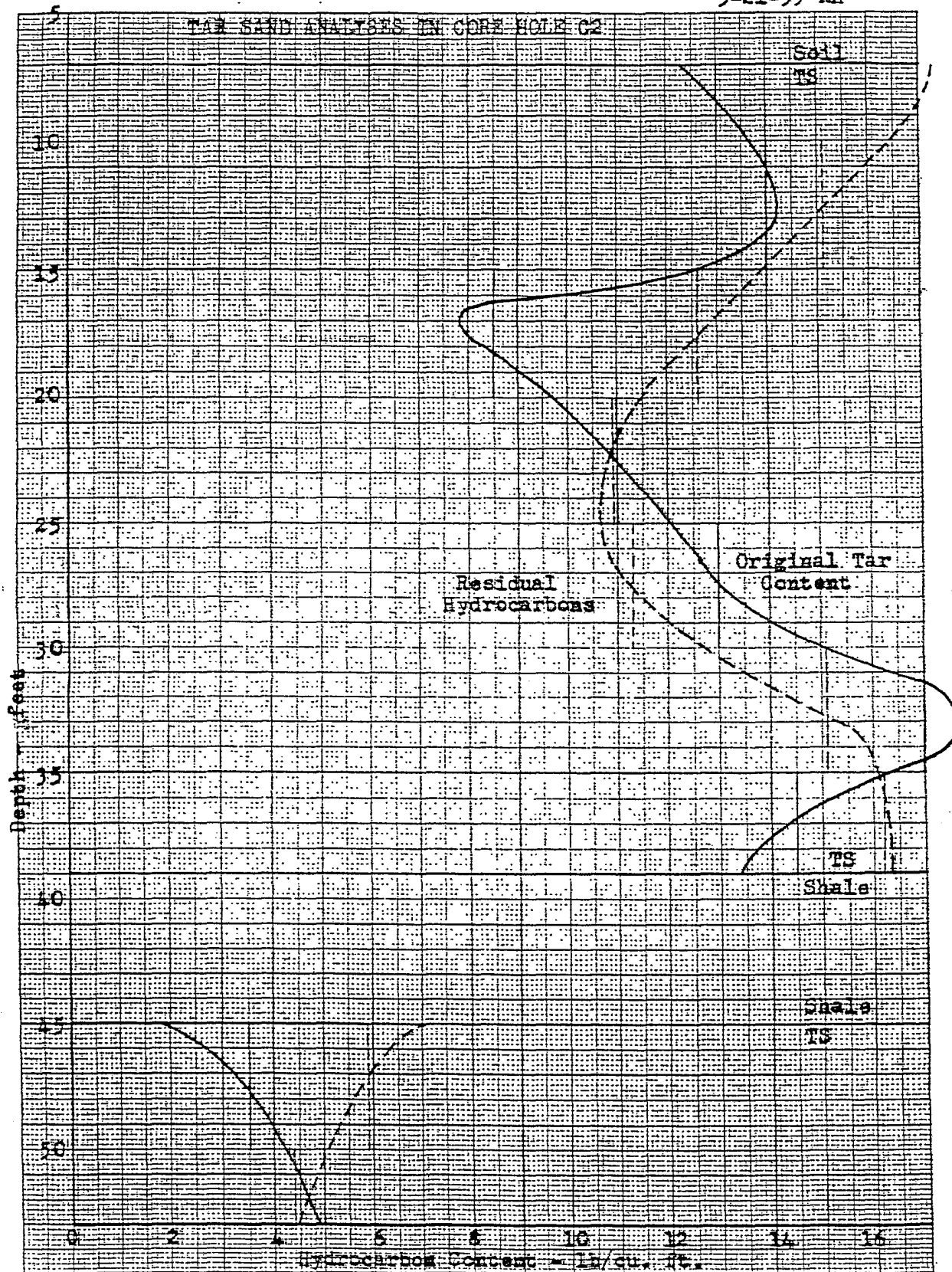


Figure 113

TAR SAND ANALYSES IN CORE HOLE C3

L9-215-3
5-21-59 RH

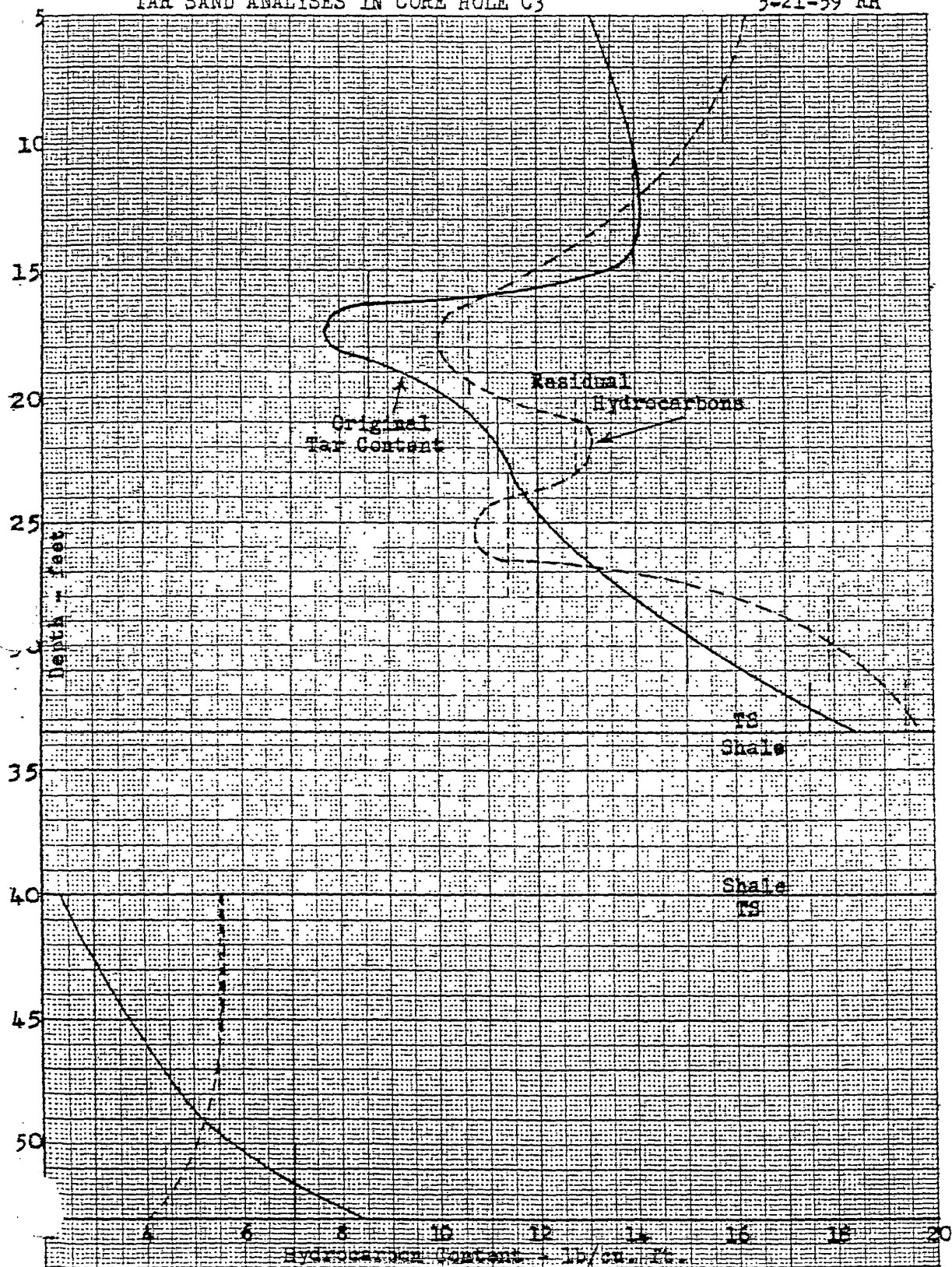
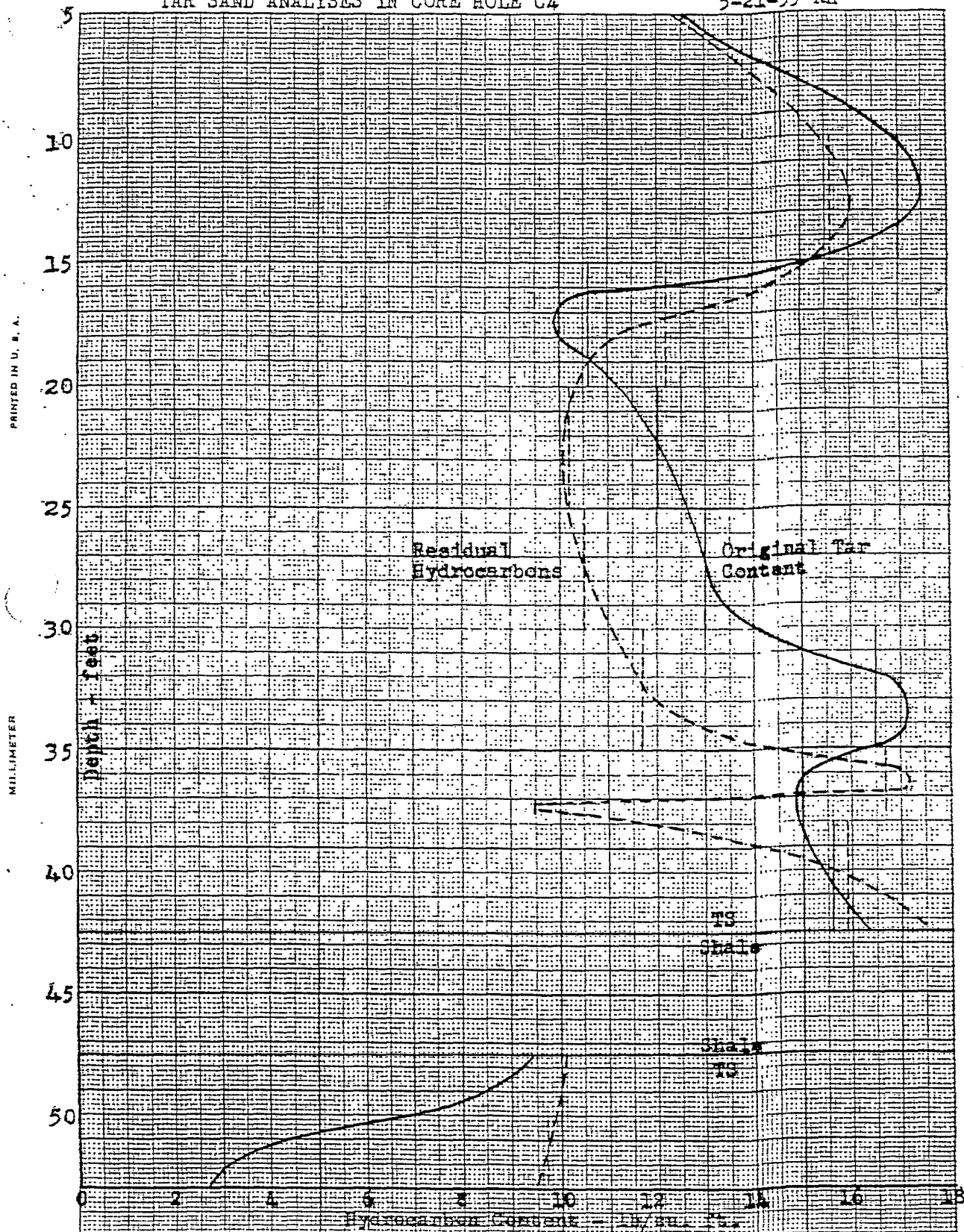


Figure 114

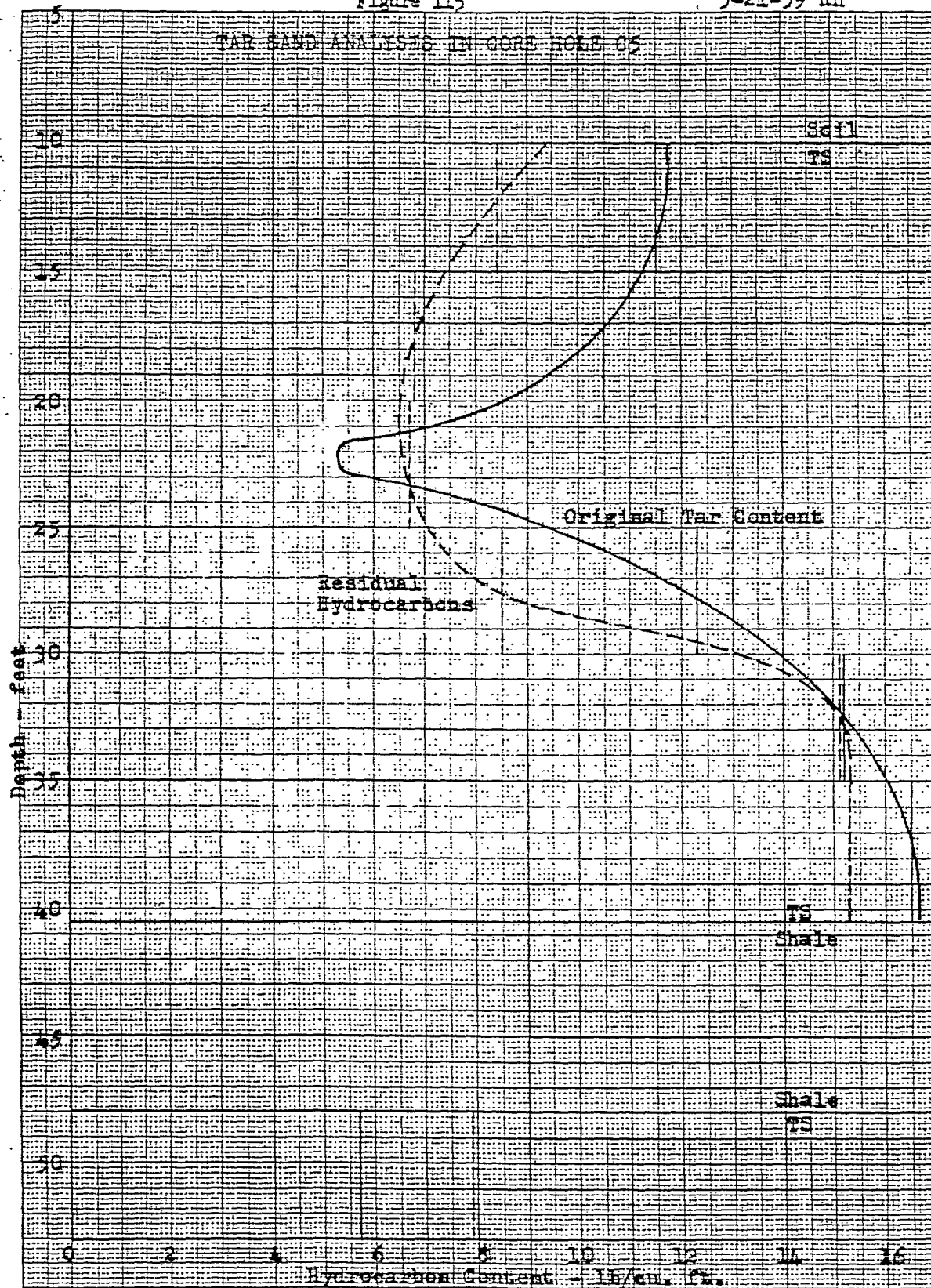
TAR SAND ANALYSES IN CORE HOLE C4

L9-215-4
5-21-59 RH



L9-215-5
5-21-59 RH

Figure 115



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Figure 116

L9-215-6
5-21-59 RH

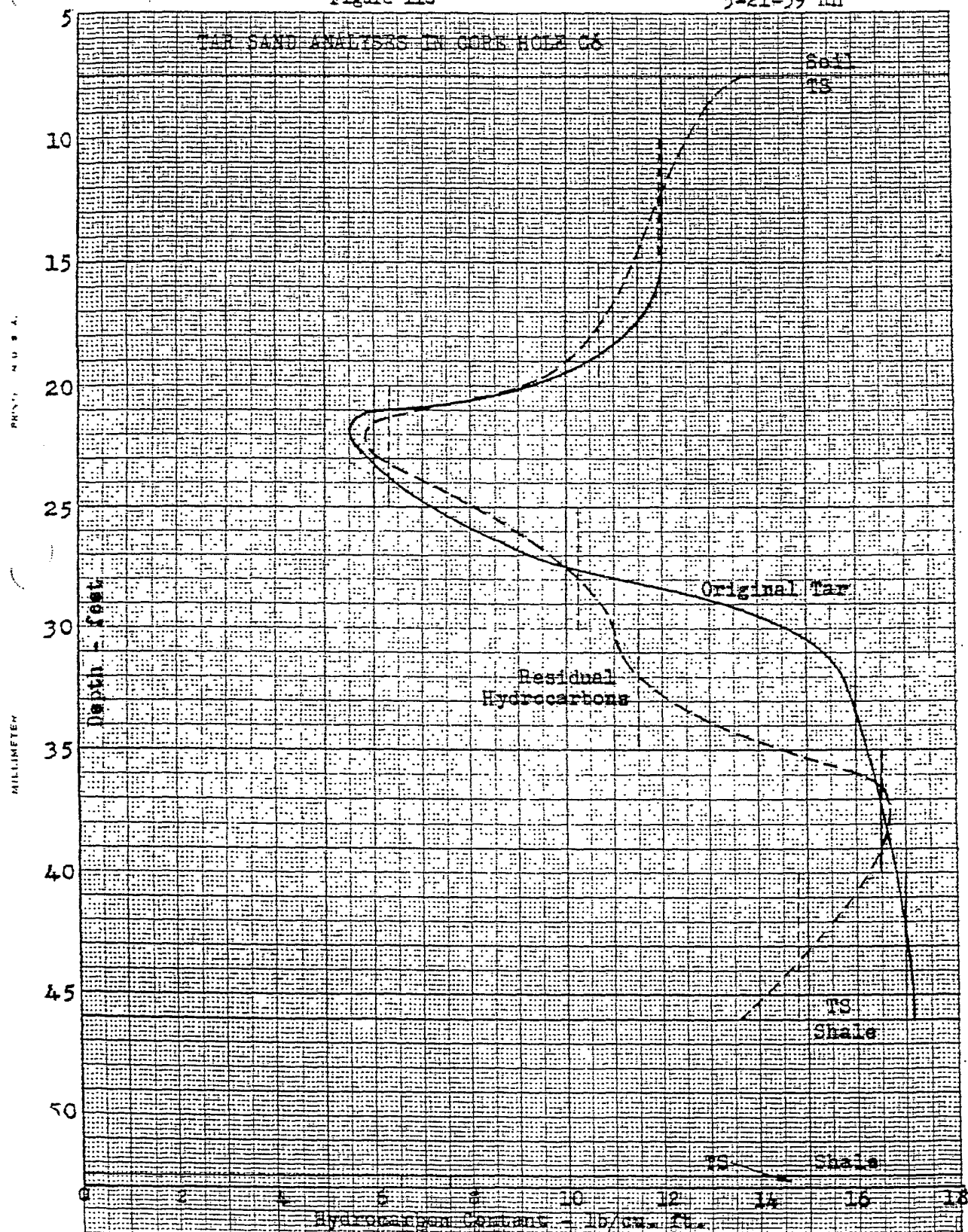


Figure 117

L9-215-7
5-21-59 RH

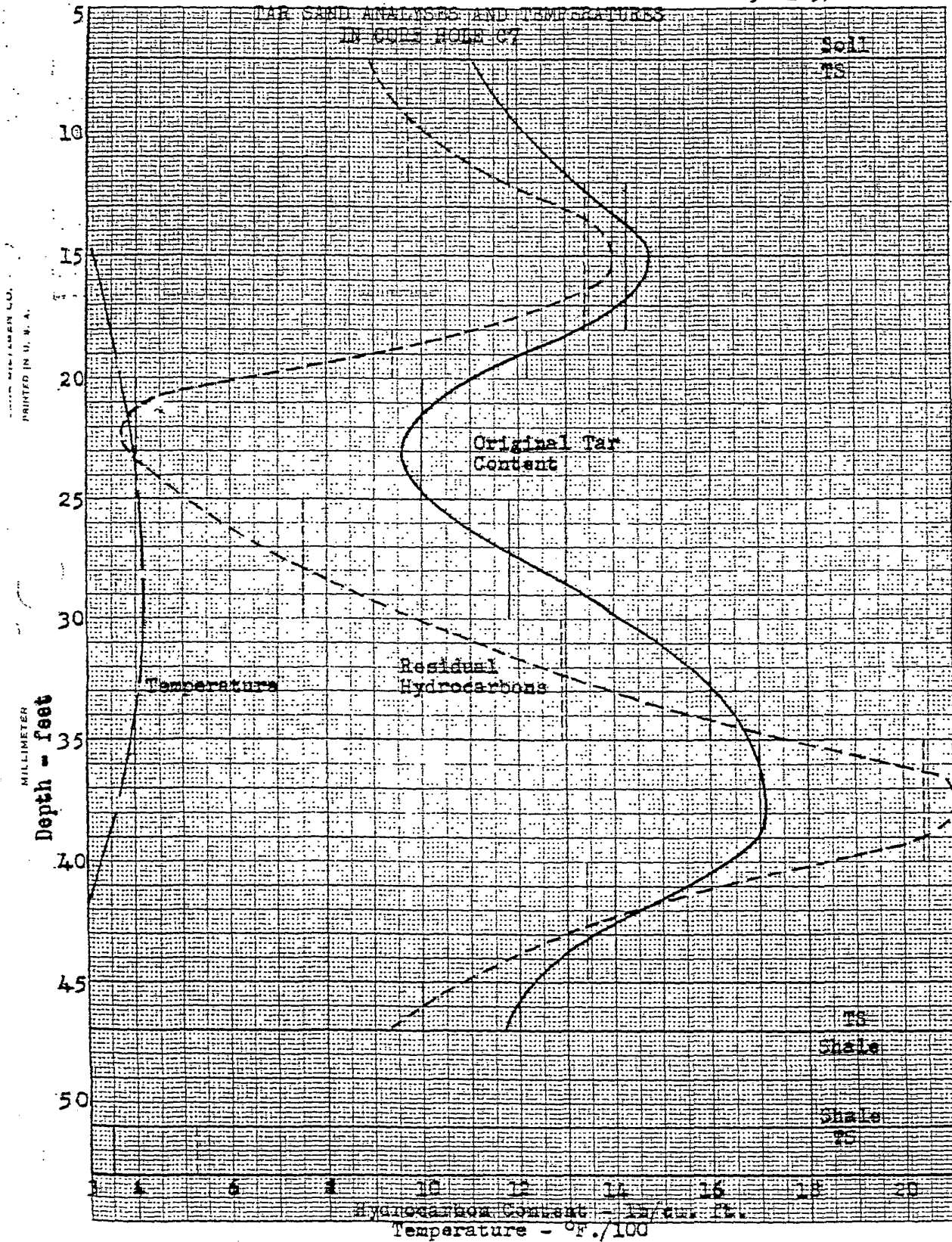


Figure 118

L9-215-8
5-21-59 RH

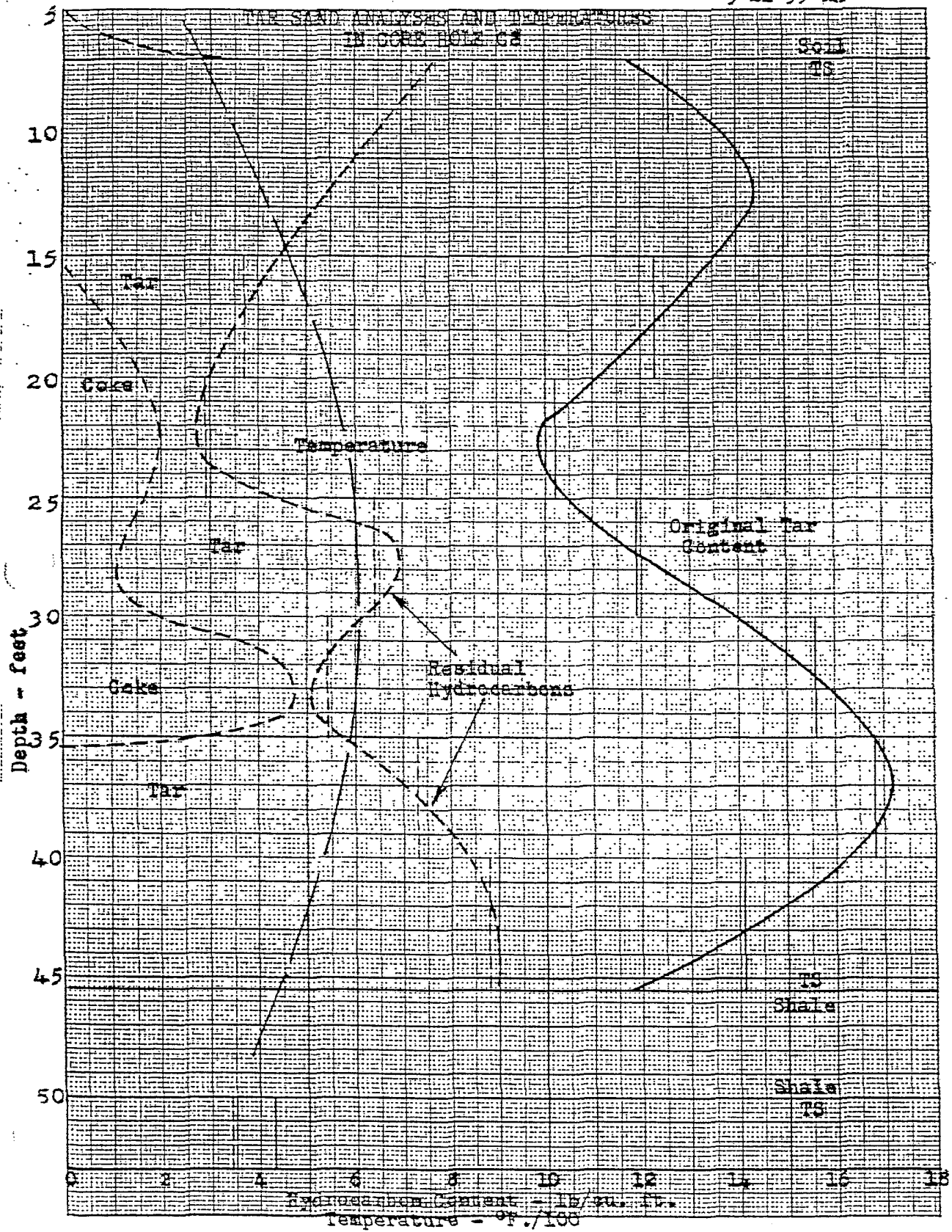
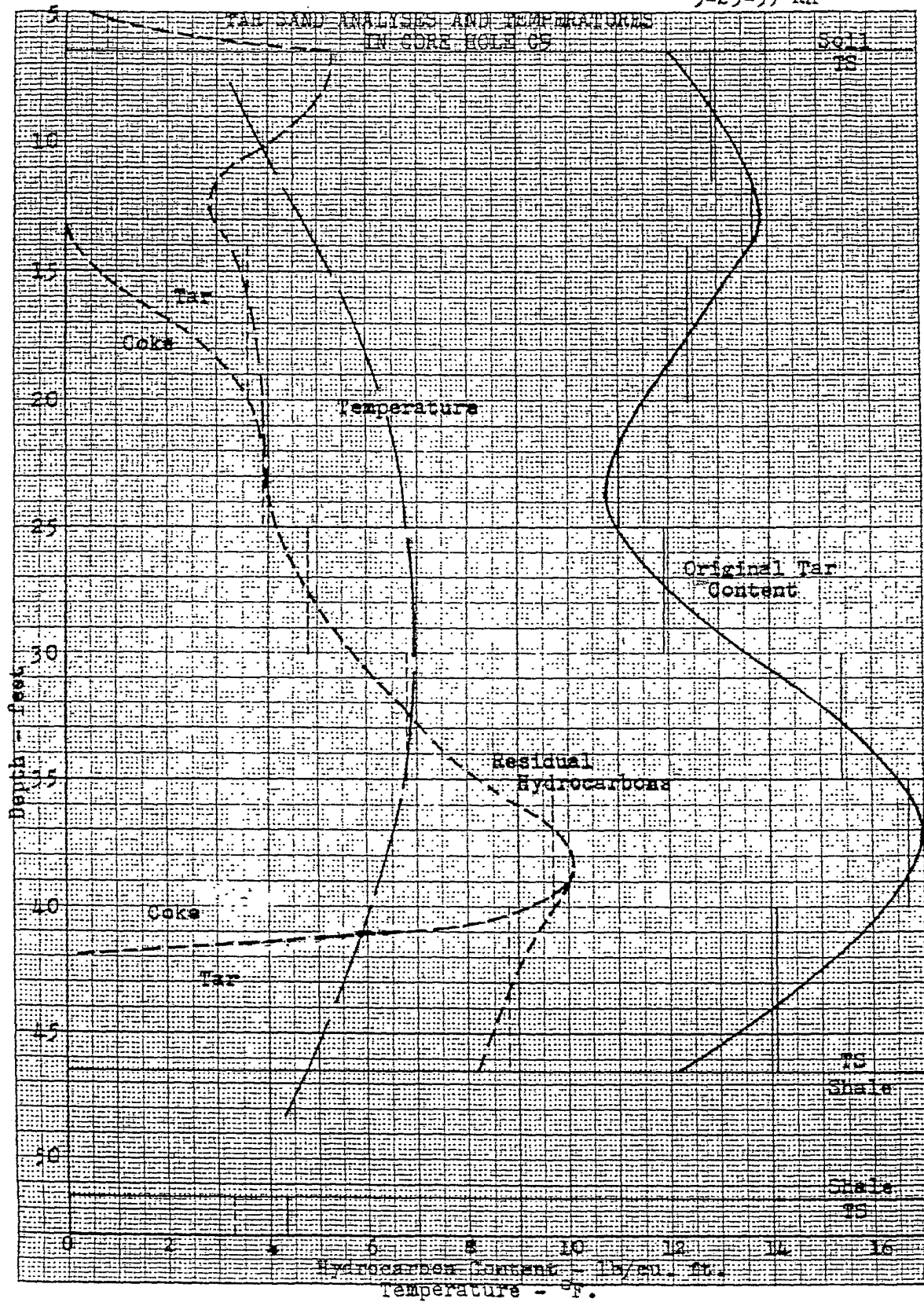


Figure 119

L9-215-9
5-25-59 RH



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Figure 120

I9-215-10
5-19-59 RH

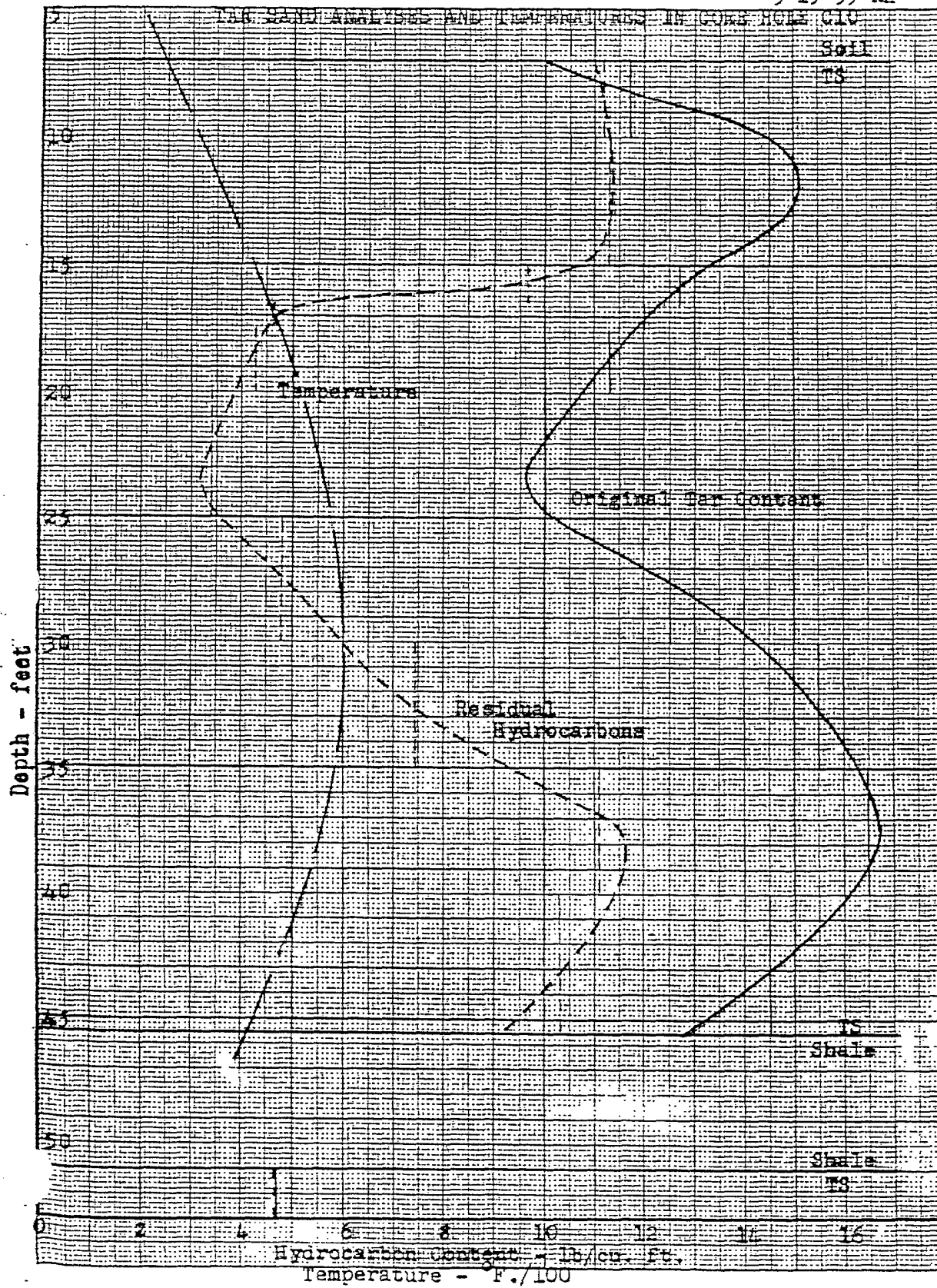


Figure 121

L9-215-11
5-19-59 RH

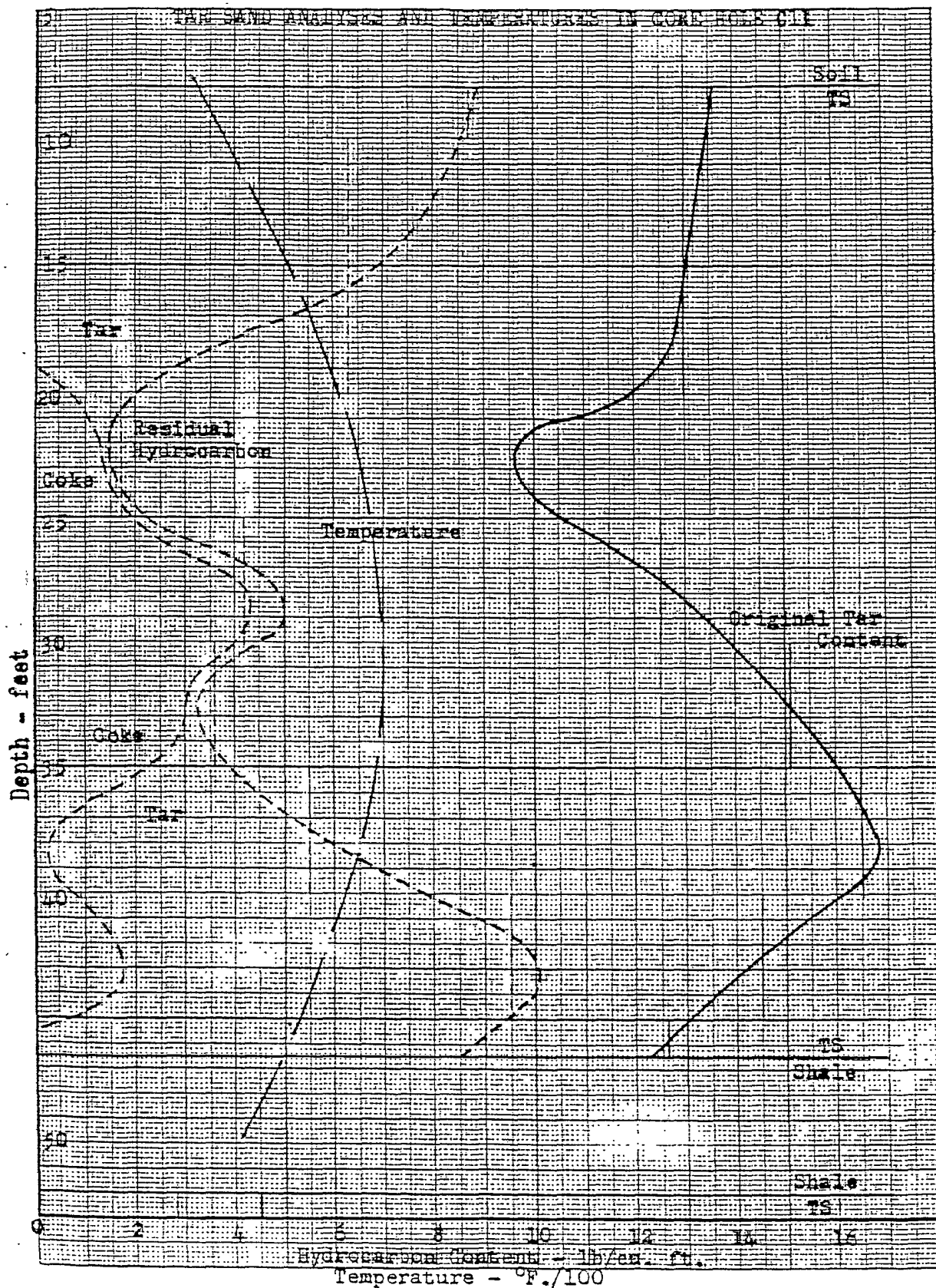
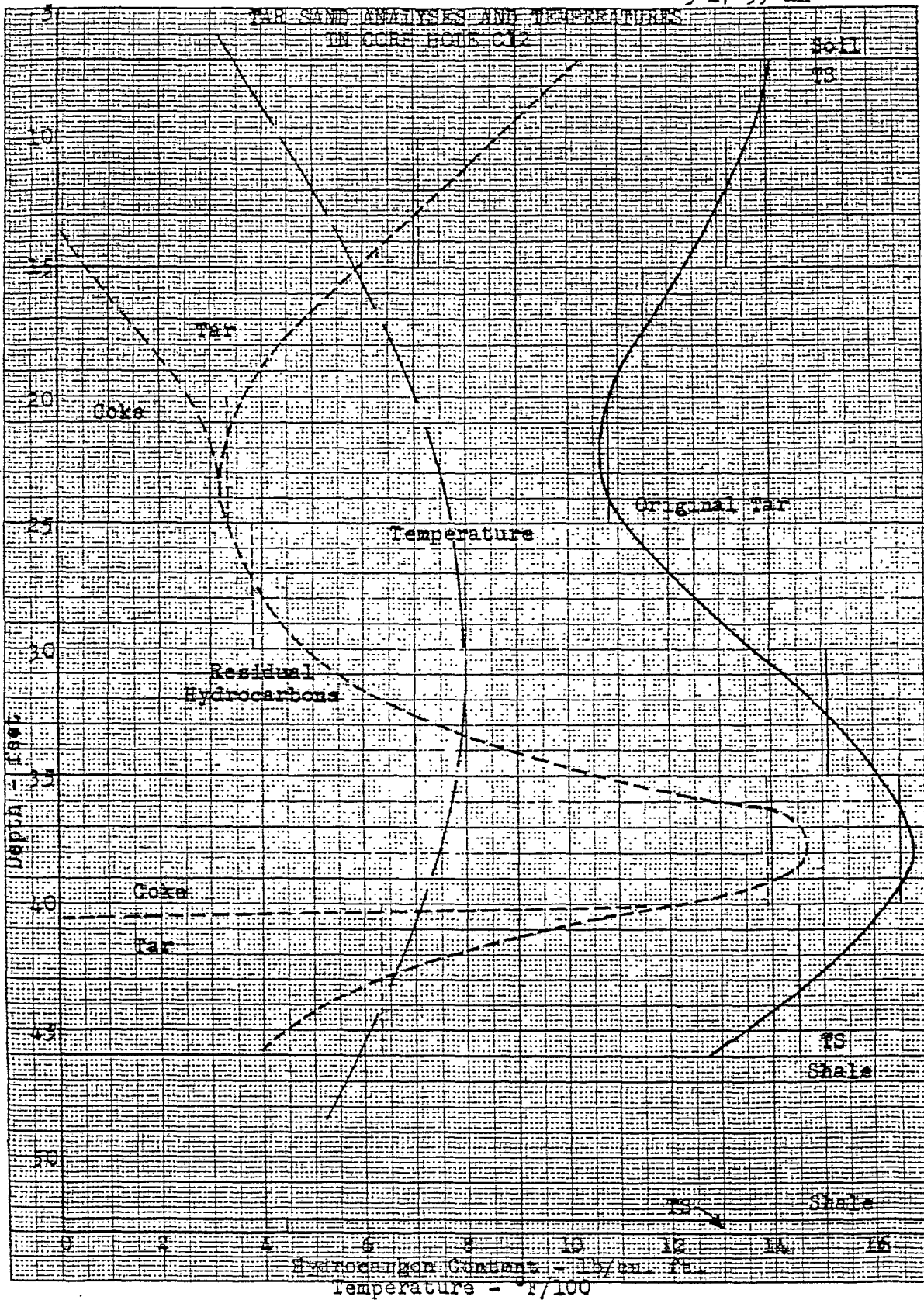


Figure 122

L9-215-12
5-27-59 RH



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Figure 123
TAR SAND ANALYSES AND TEMPERATURES

L9-215-13
5-19-59 RH

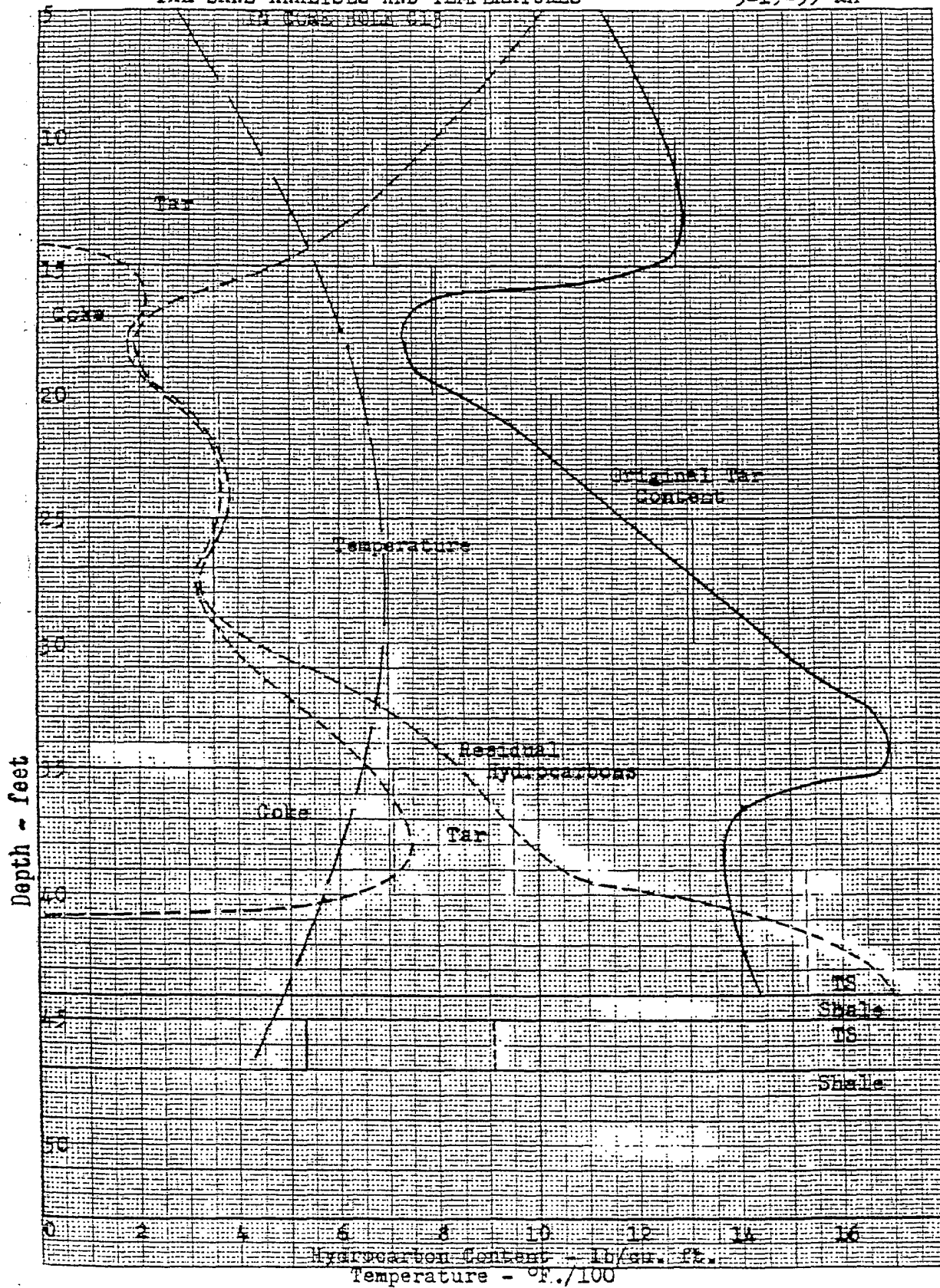


Figure 124

L9-215-14
5-19-59 RH

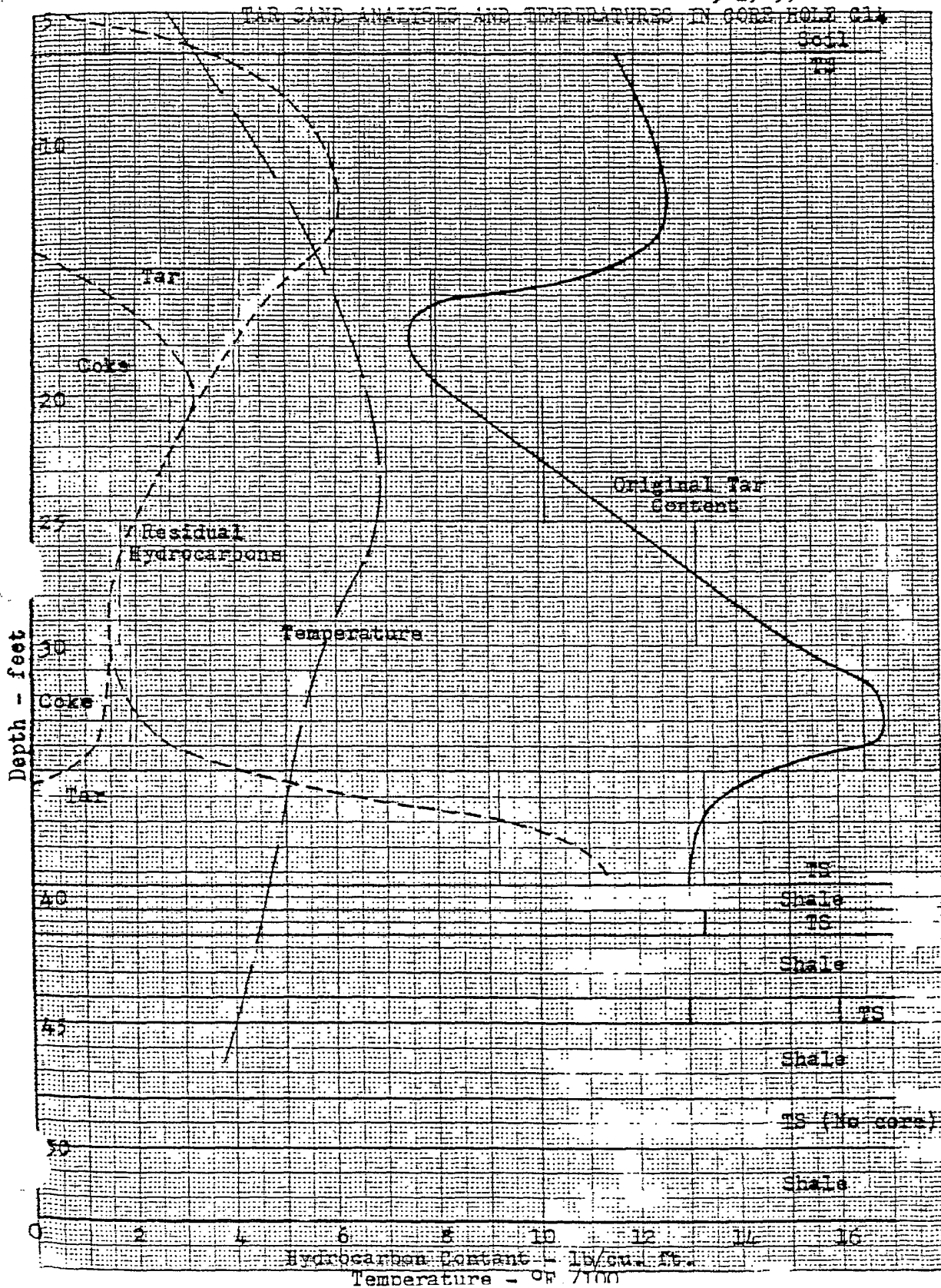


Figure 125

L9-215-15
5-27-59 RH

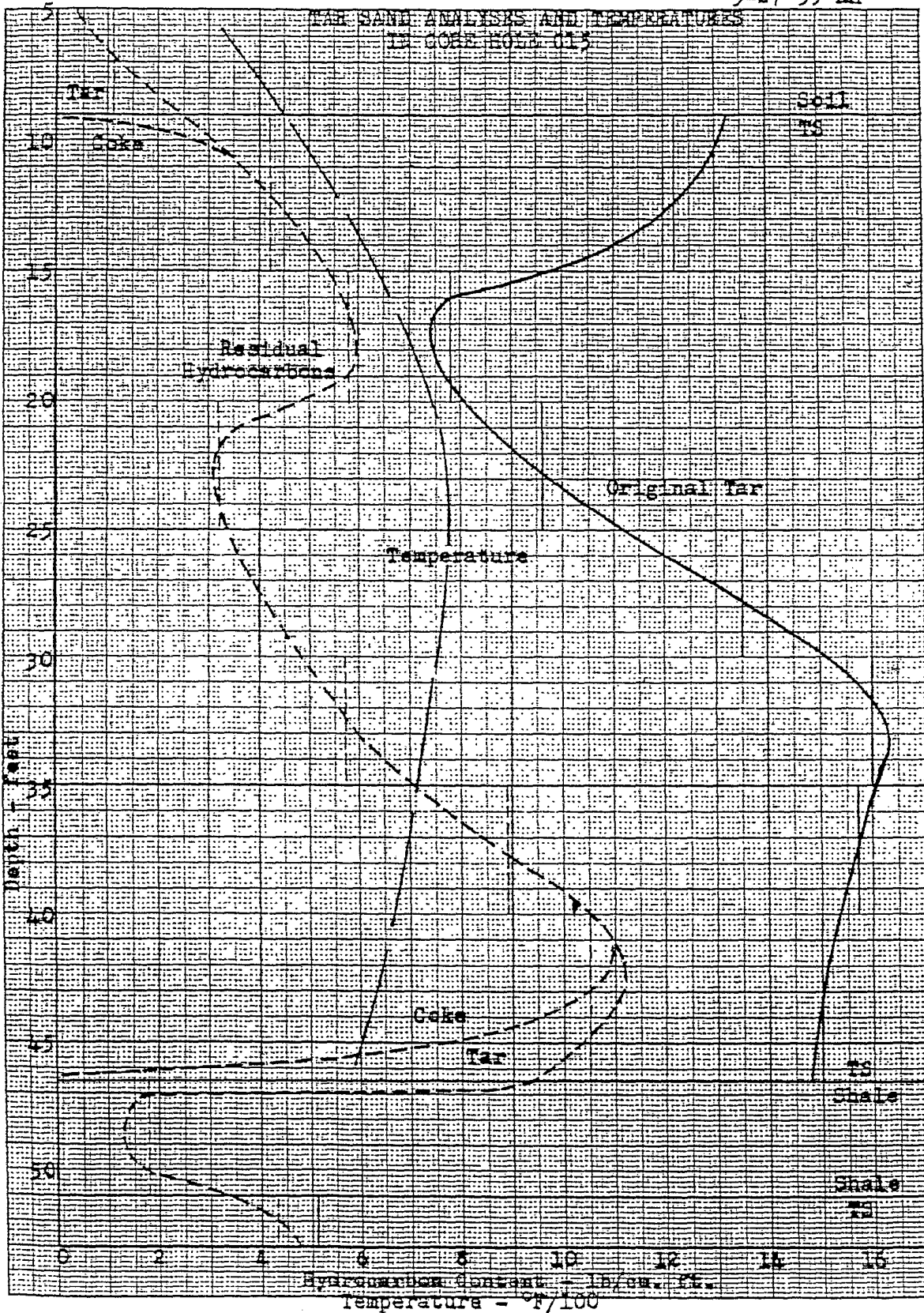


Figure 126

L9-215-16
5-14-59 RH

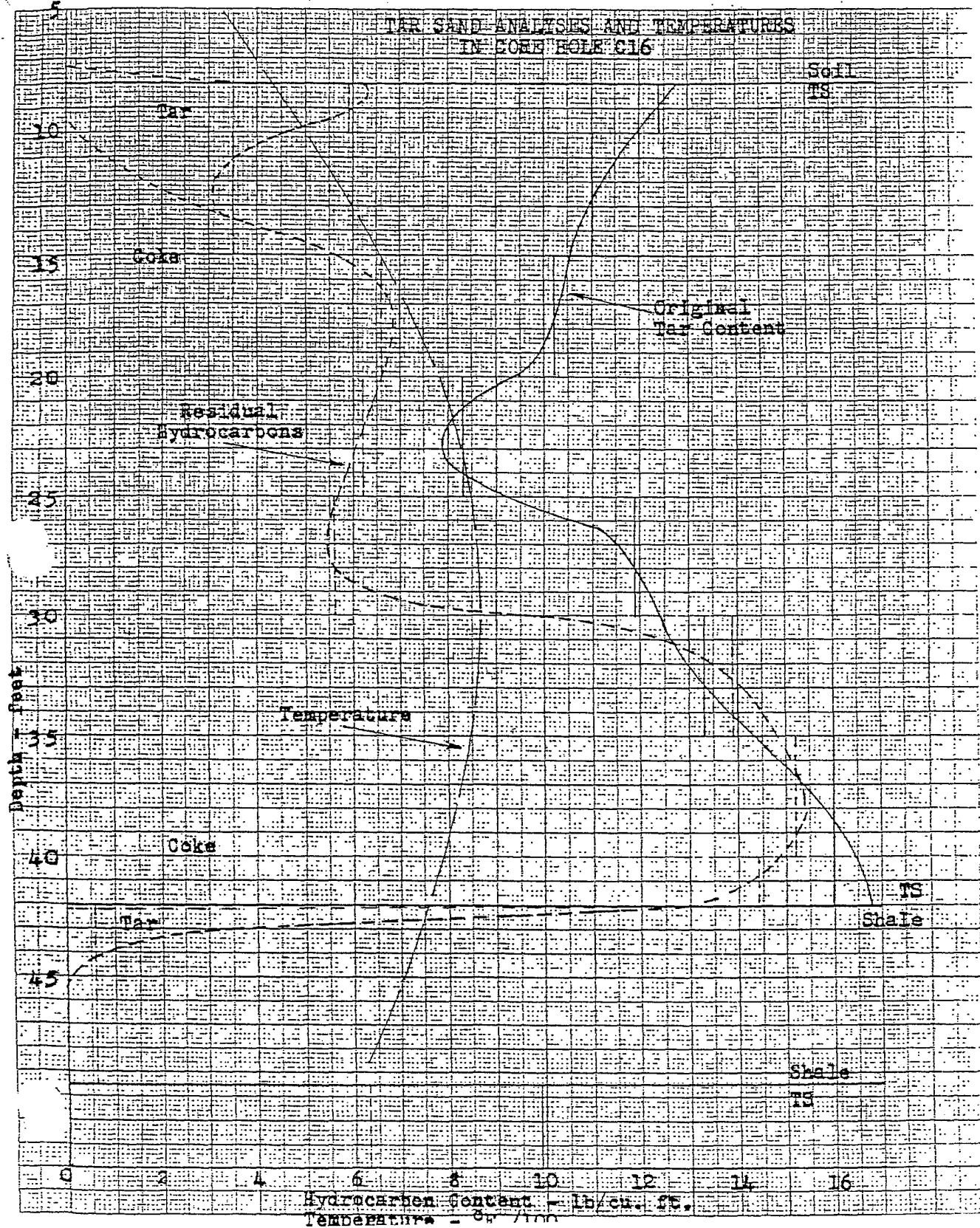


Figure 127

I9-215-17
5-18-59 RH

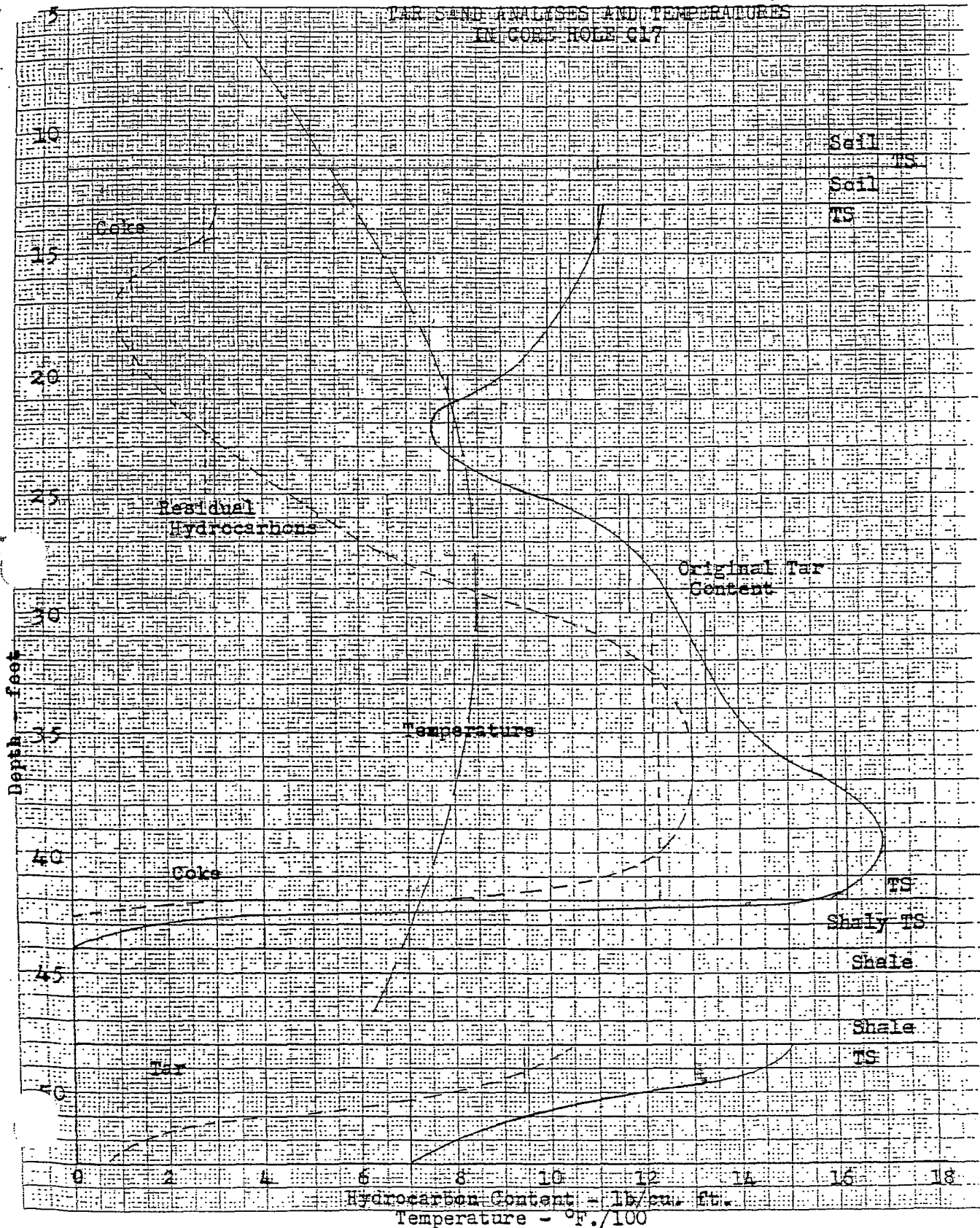


Figure 128

L9-215-18
5-18-59 RH

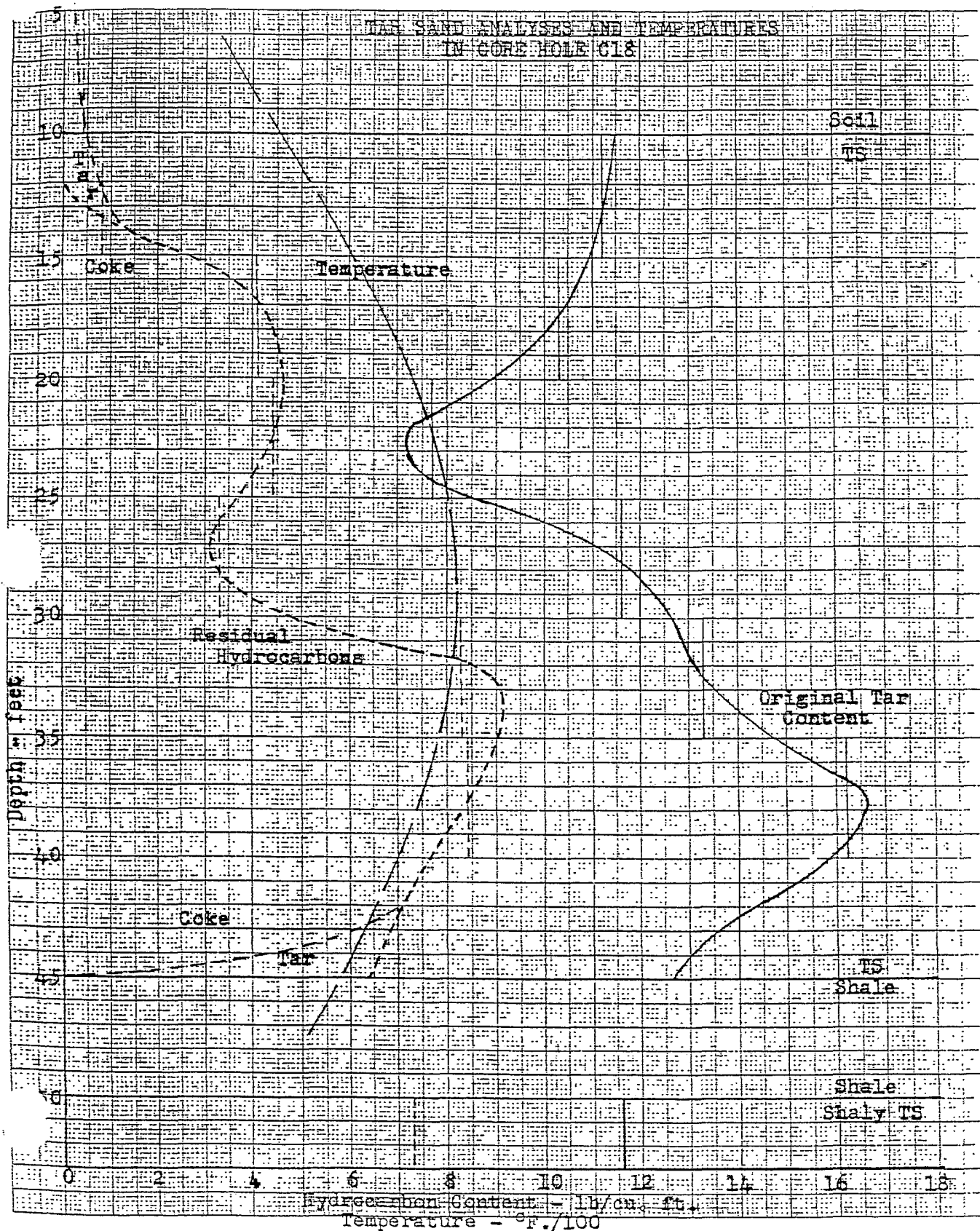


Figure 129

L9-215-19
5-18-59 RH

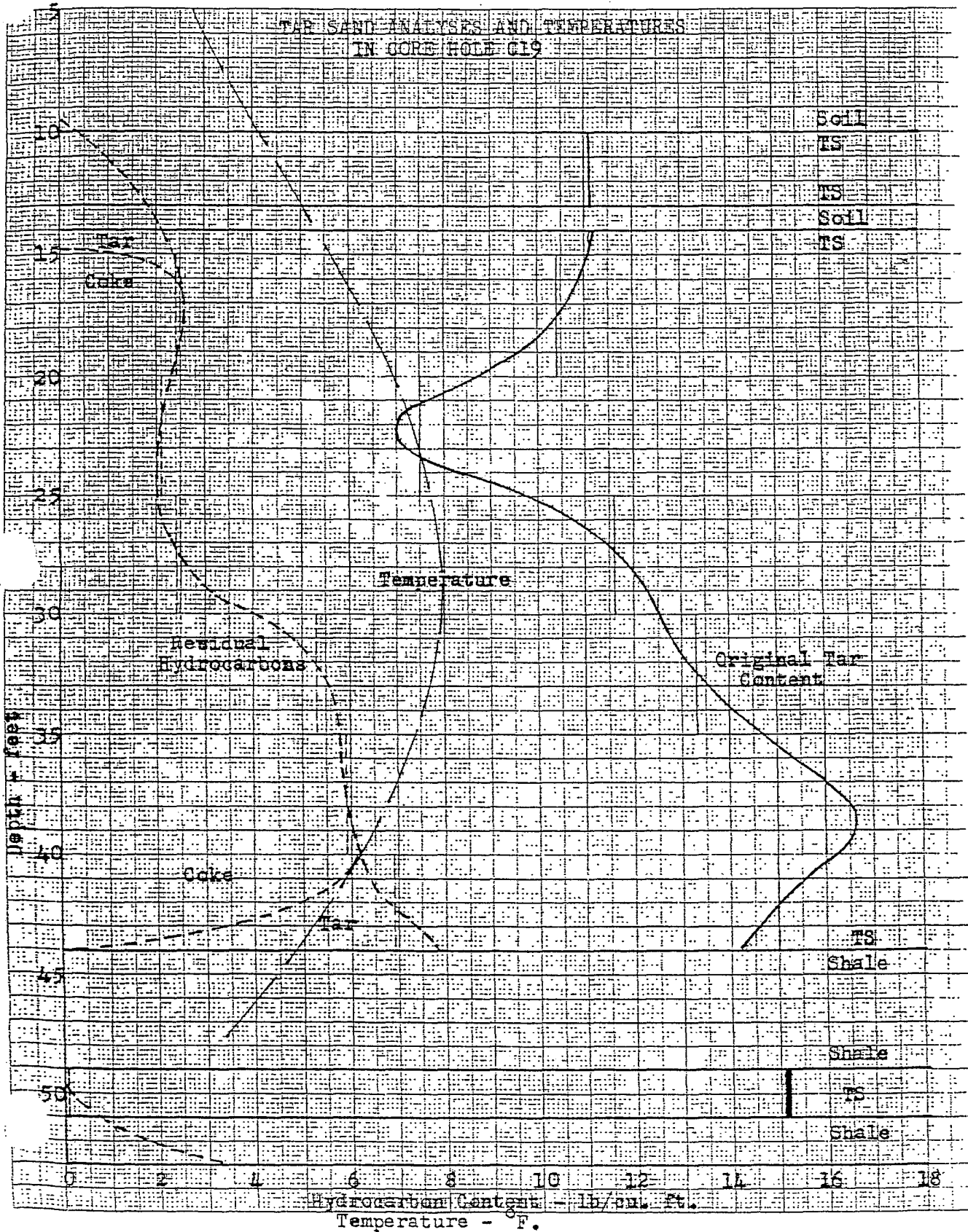


Figure 130

19-215-20
5-18-59 RH

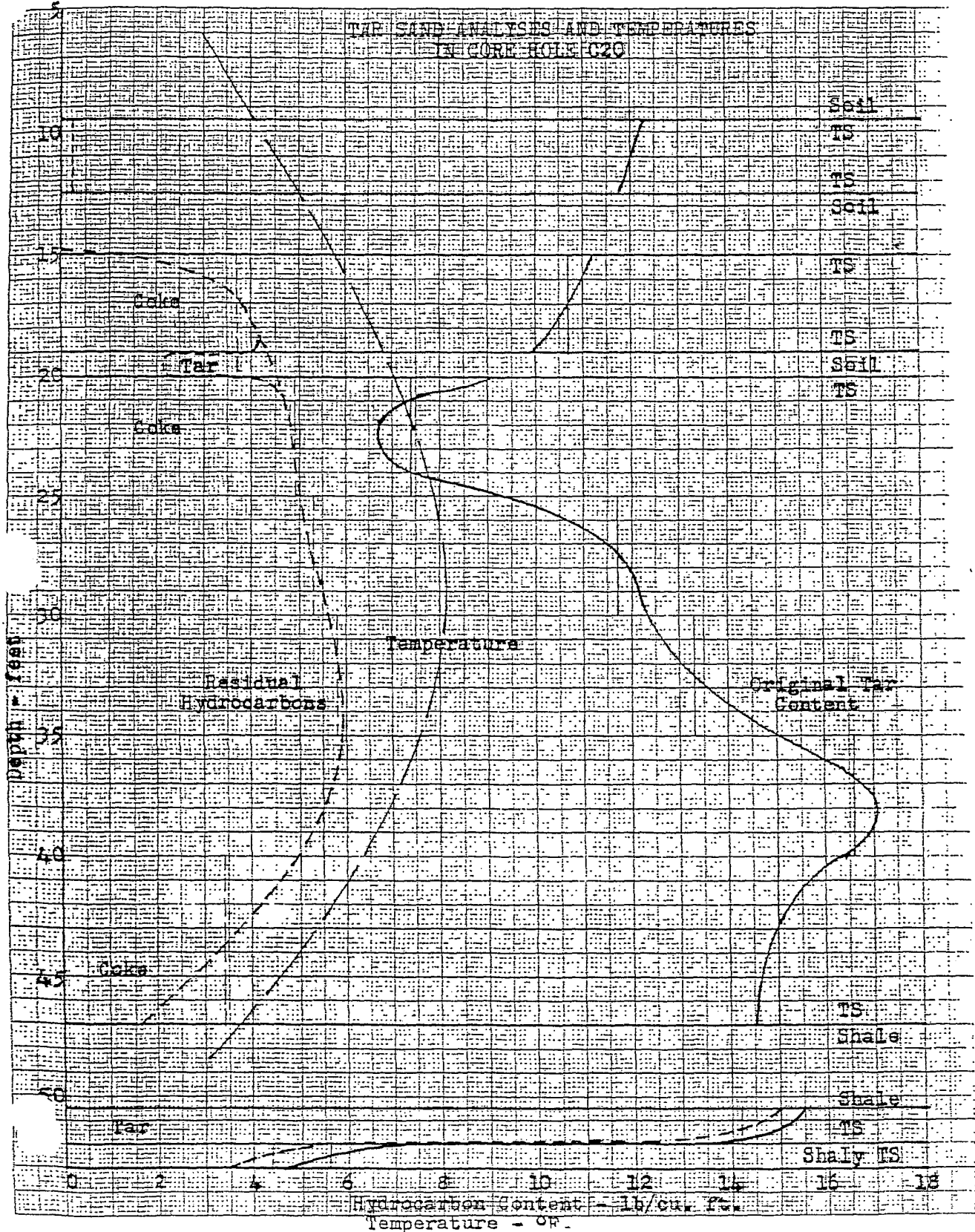


Figure 131

L9-215-21
5-18-59

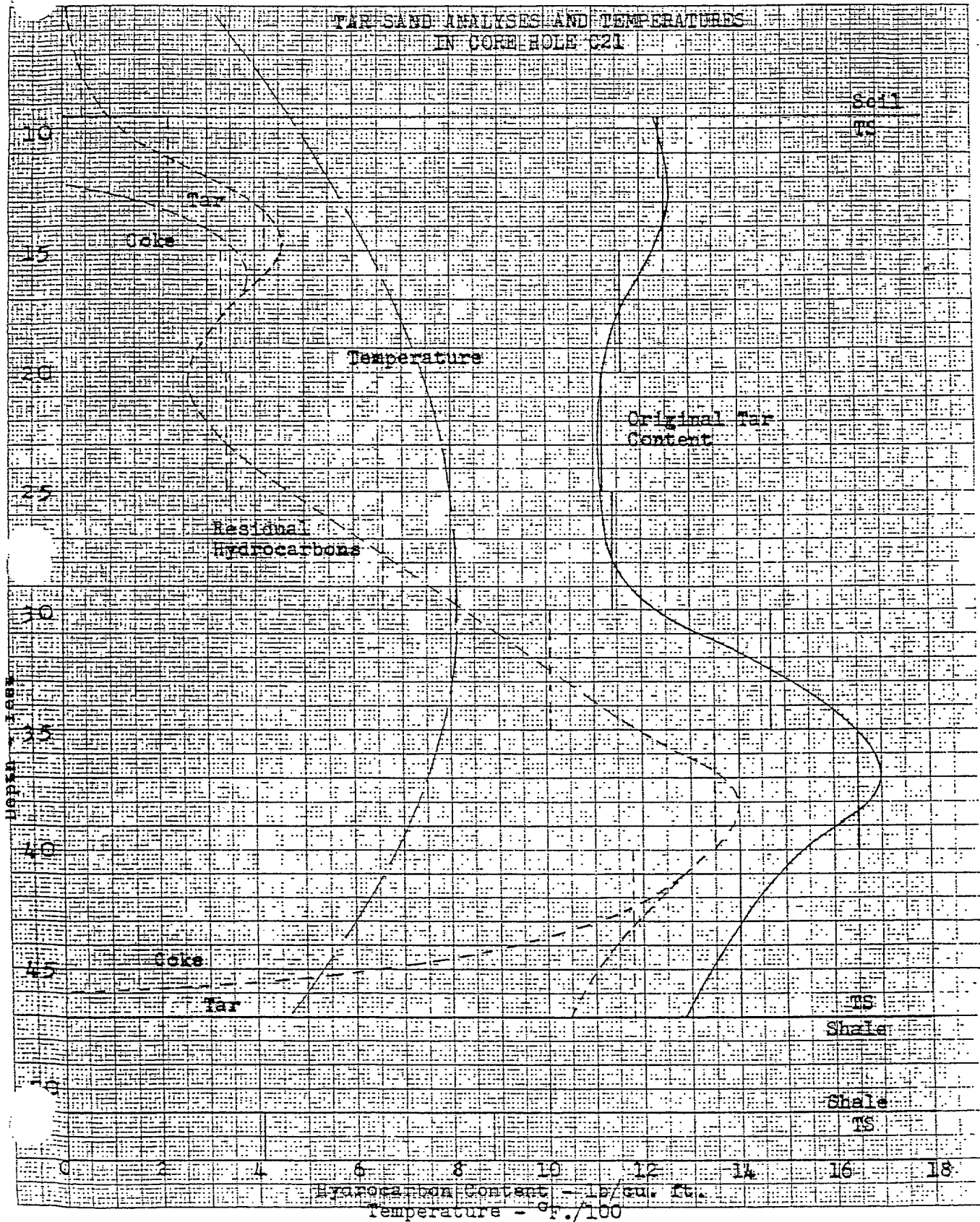


Figure 132

19-215-22
5-18-59 RH

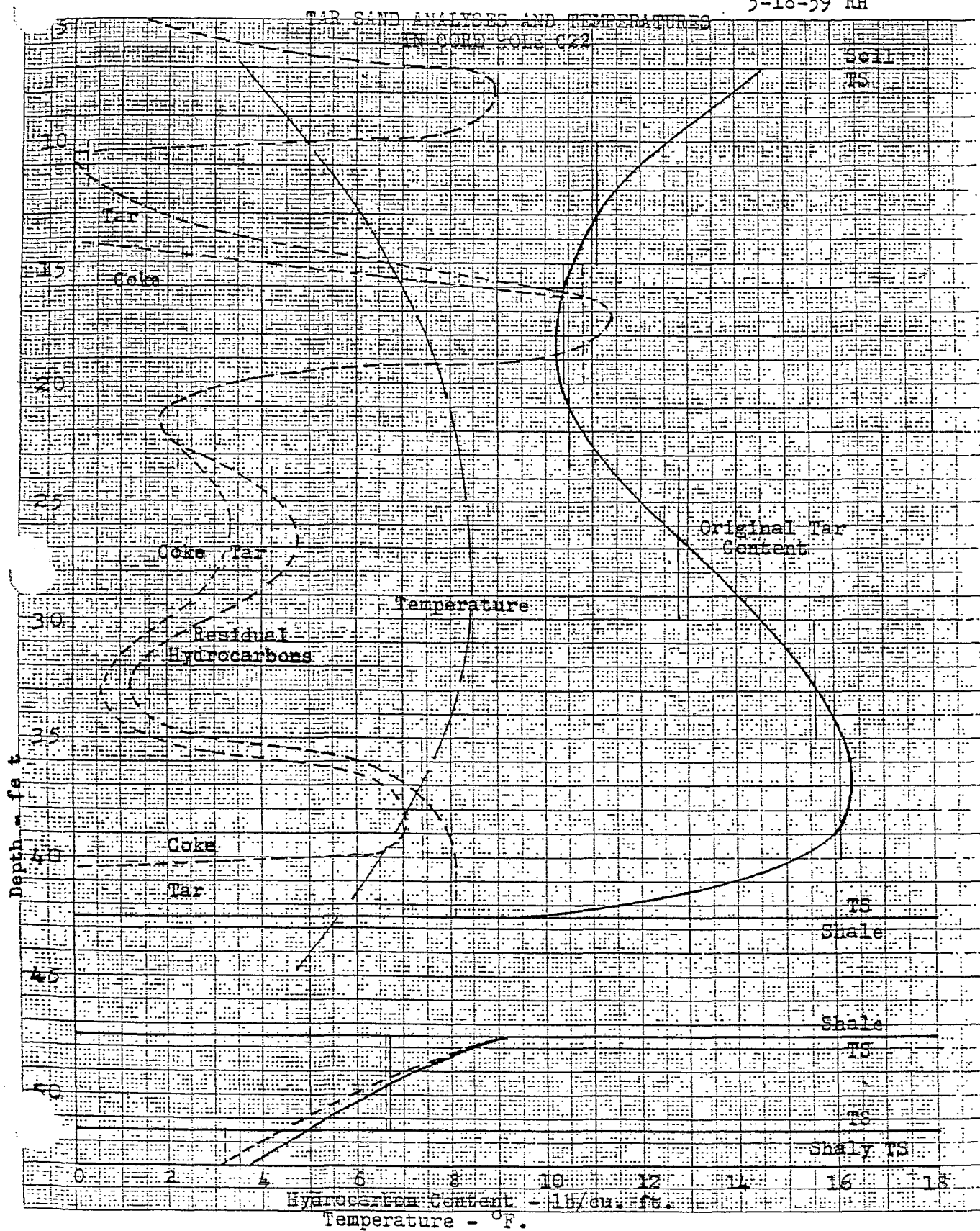


Figure 133

L9-215-23
5-18-59 RH

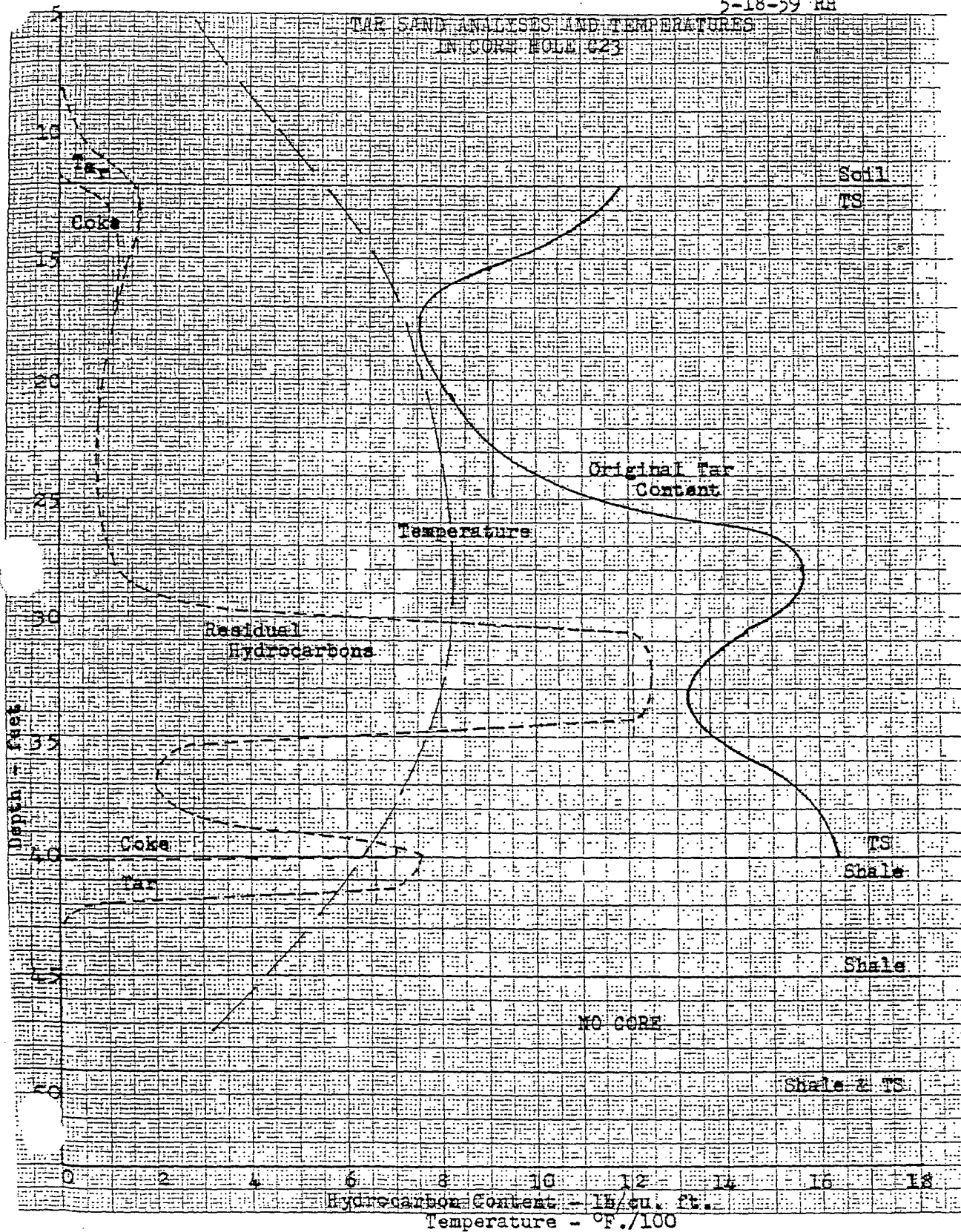
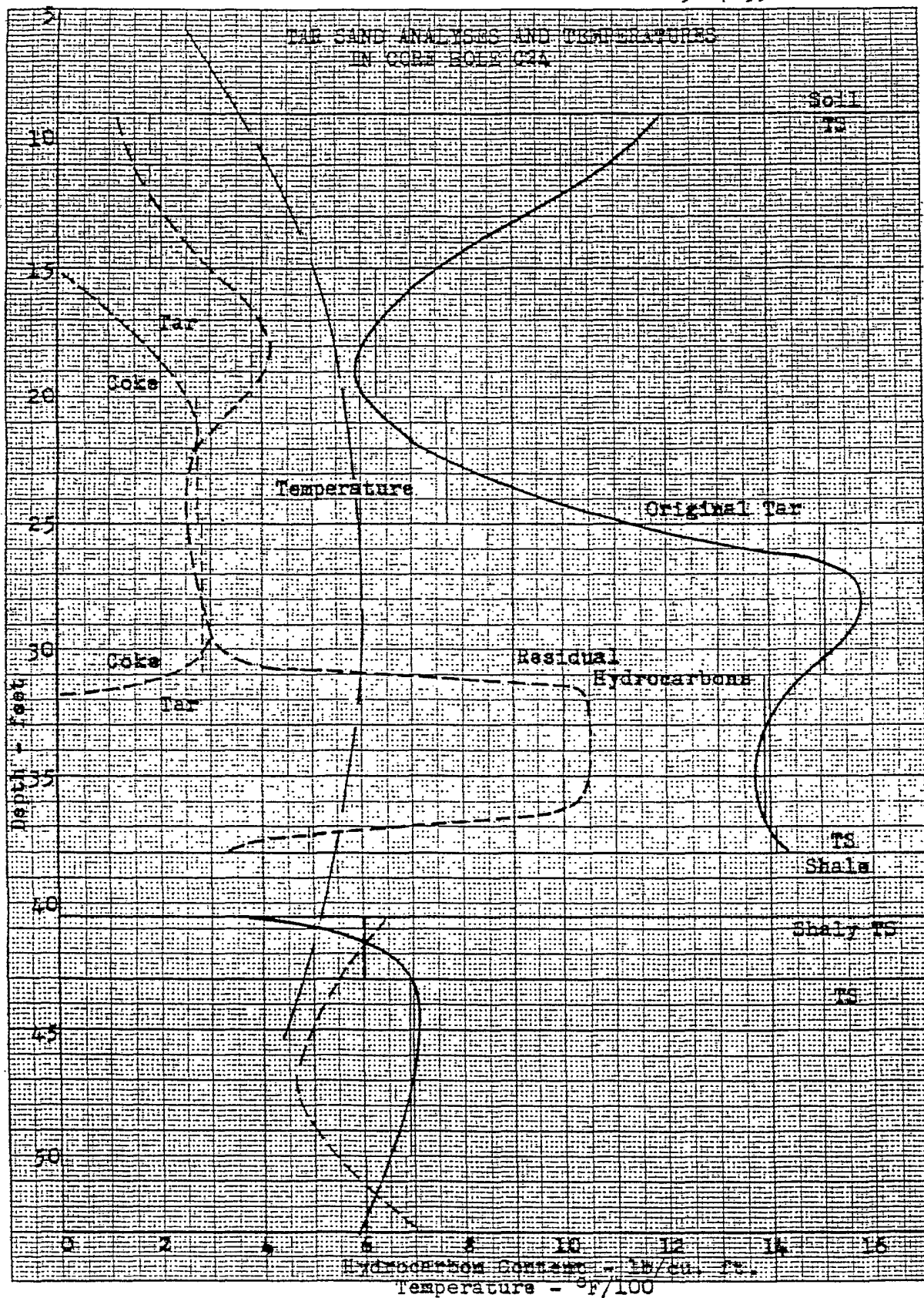


Figure 134

L9-215-24
5-27-59 RH

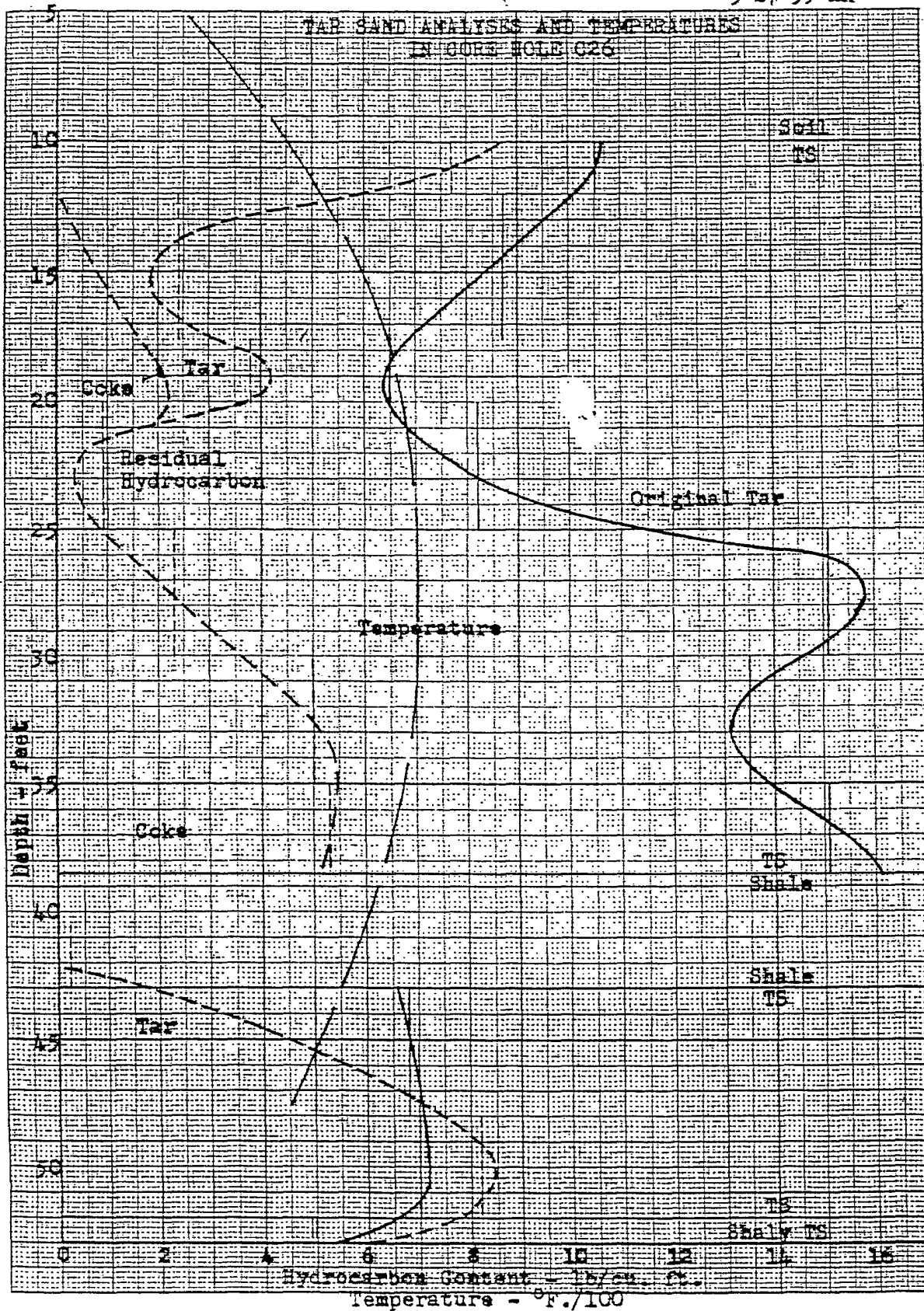


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Figure 135

19-215-26
5-27-59 RH



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MILLIMETER

Figure 136

L9-215-27
5-18-59 RH

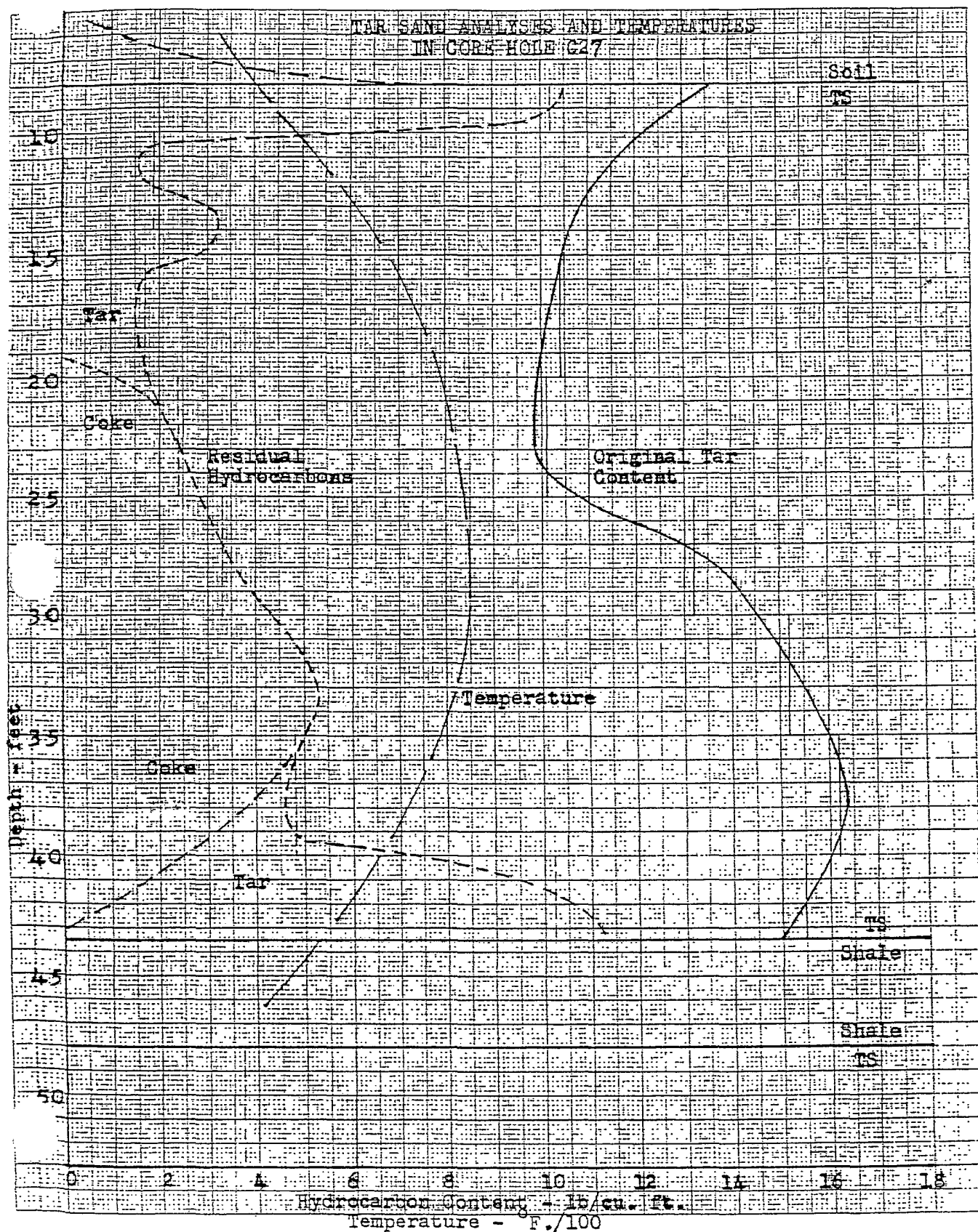


Figure 137

L9-215-28
5-18-59 RH

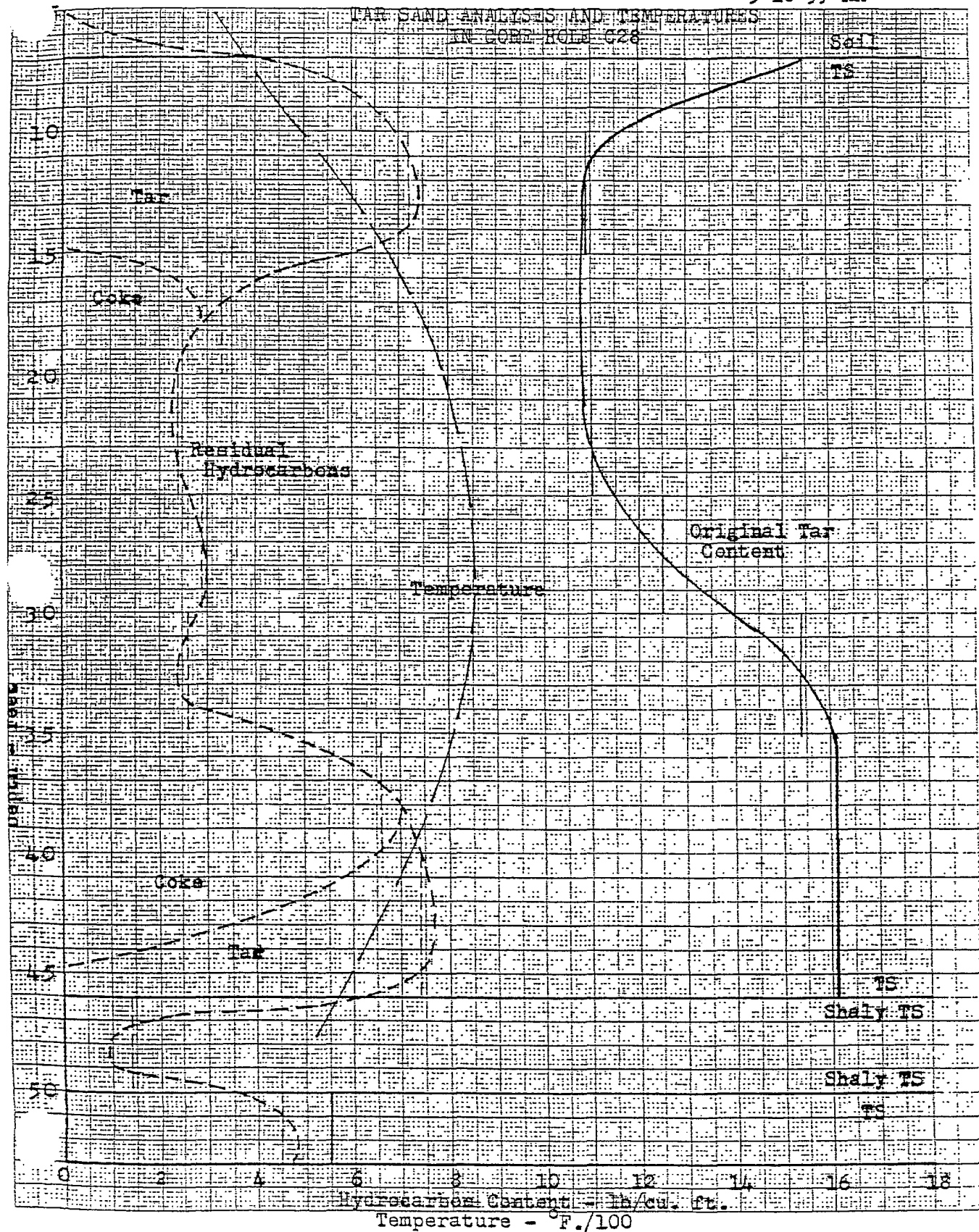


Figure 138

L9-215-29
5-18-59 RH.

TAR SAND ANALYSES
AND TEMPERATURES
IN CORE HOLE C29

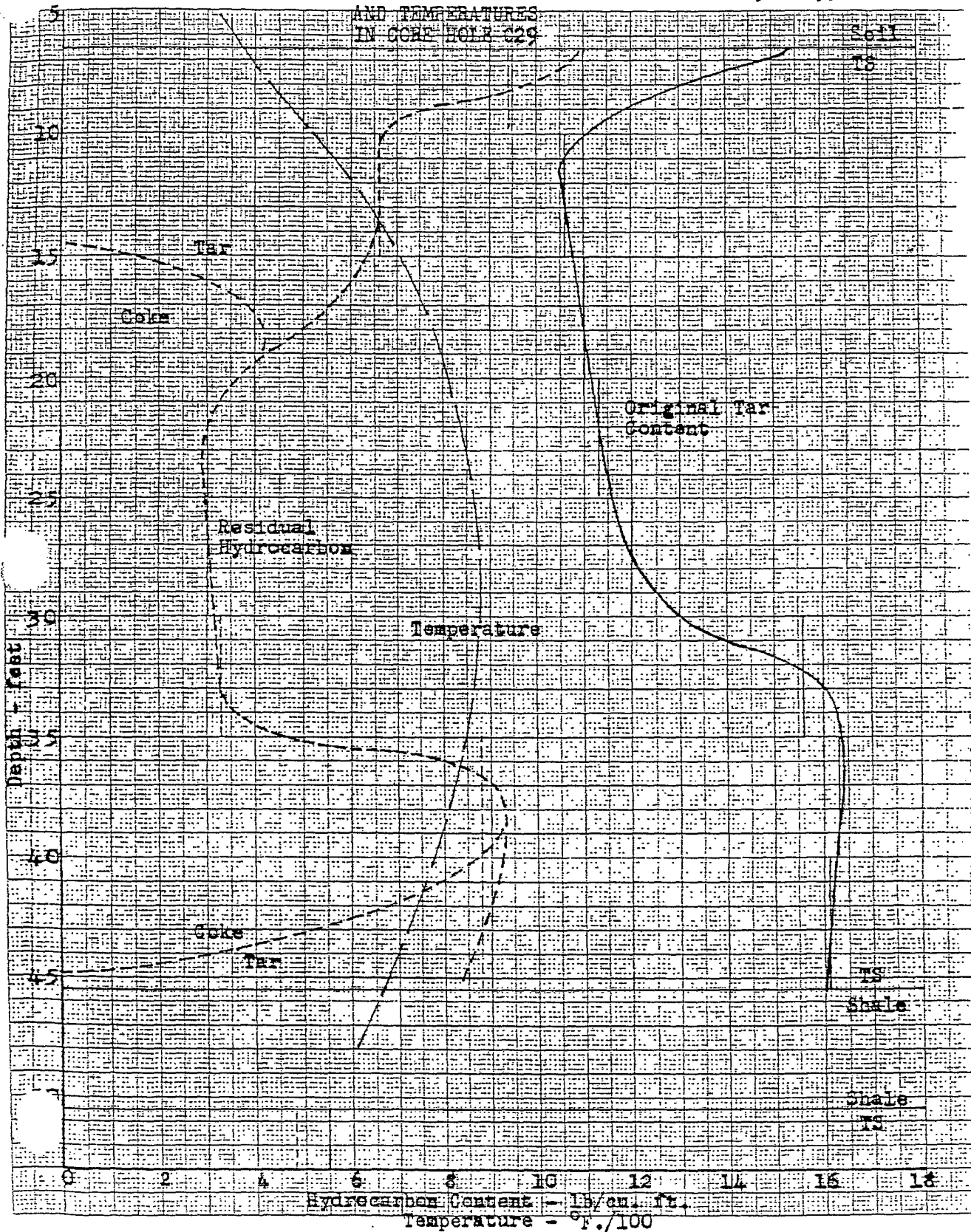


Figure 139

TAR SAND ANALYSES IN CORE HOLE C30

L9-215-30
5-18-59 RH

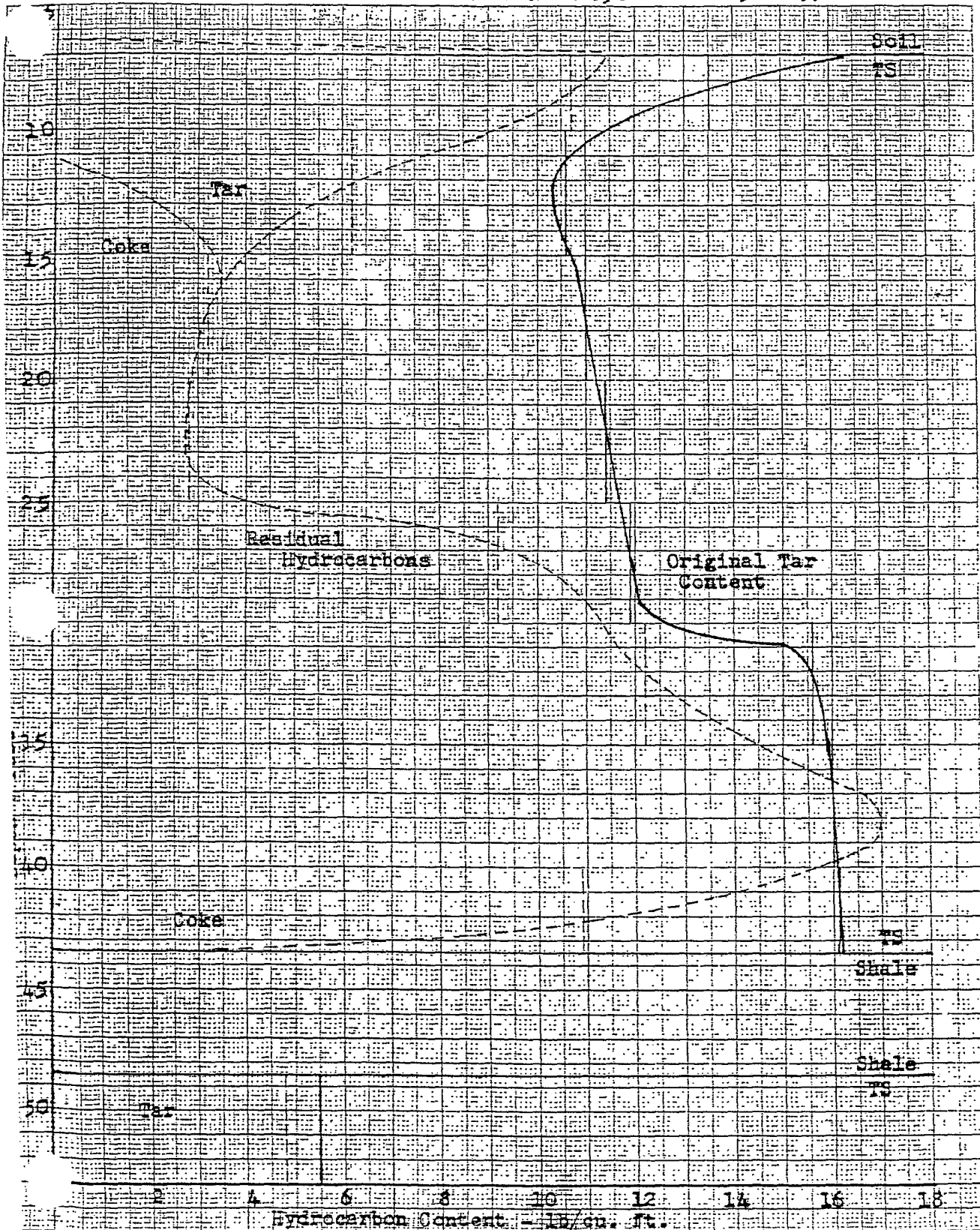


Figure 140

L9-215-31
5-18-59 RH

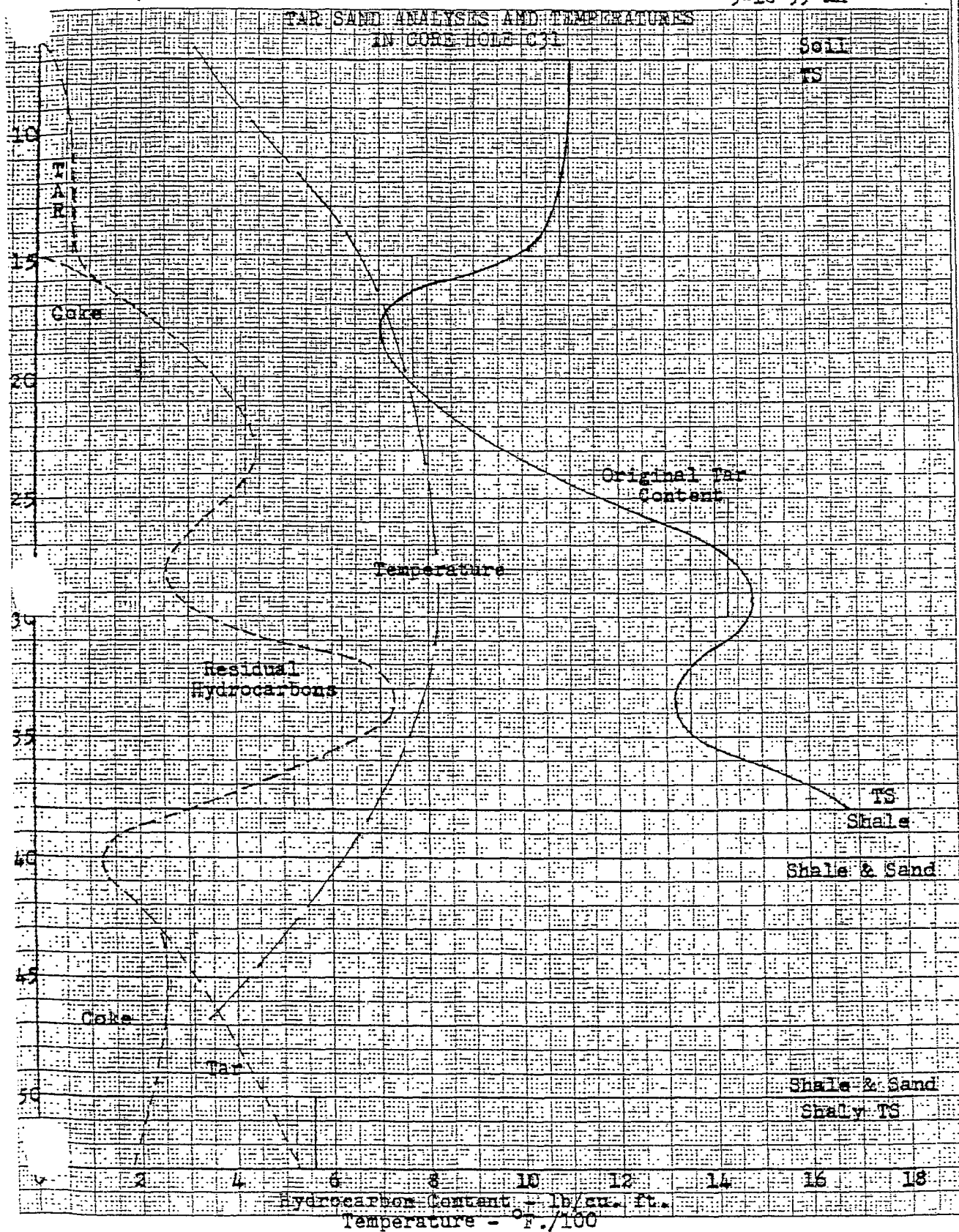
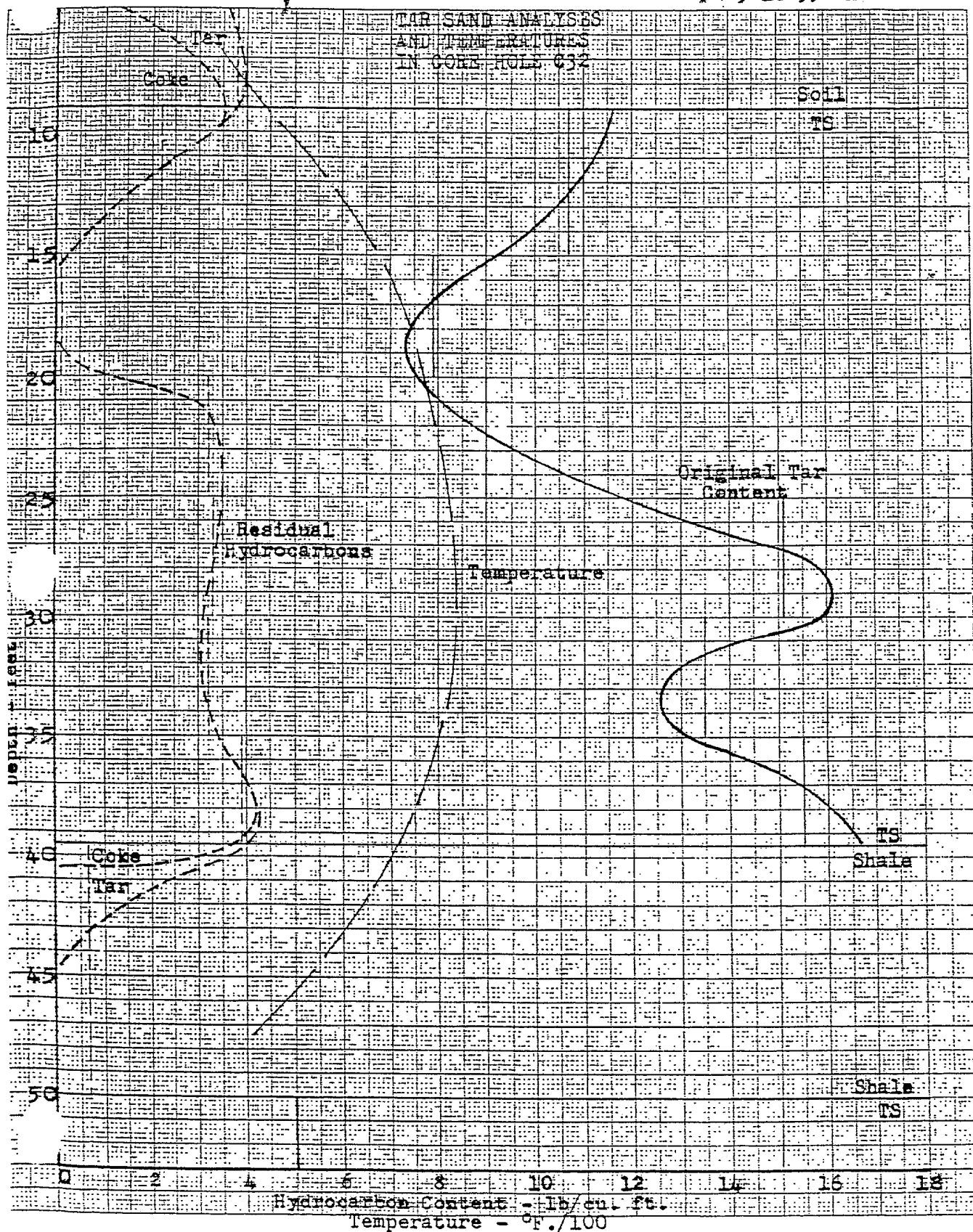


Figure 141

L9-215-32
5-18-59 RH



L9-215-33
5-18-59 RH

Figure 140

TAR SAND ANALYSES
AND TEMPERATURES
IN CORE HOLE C33

Original Tar
Content

Residual
Hydrocarbons

Temperature

TS
Shaly TS

Shale

Shale

Shaly TS

Hydrocarbon Content - lb/cu. ft.

Temperature - °F./100

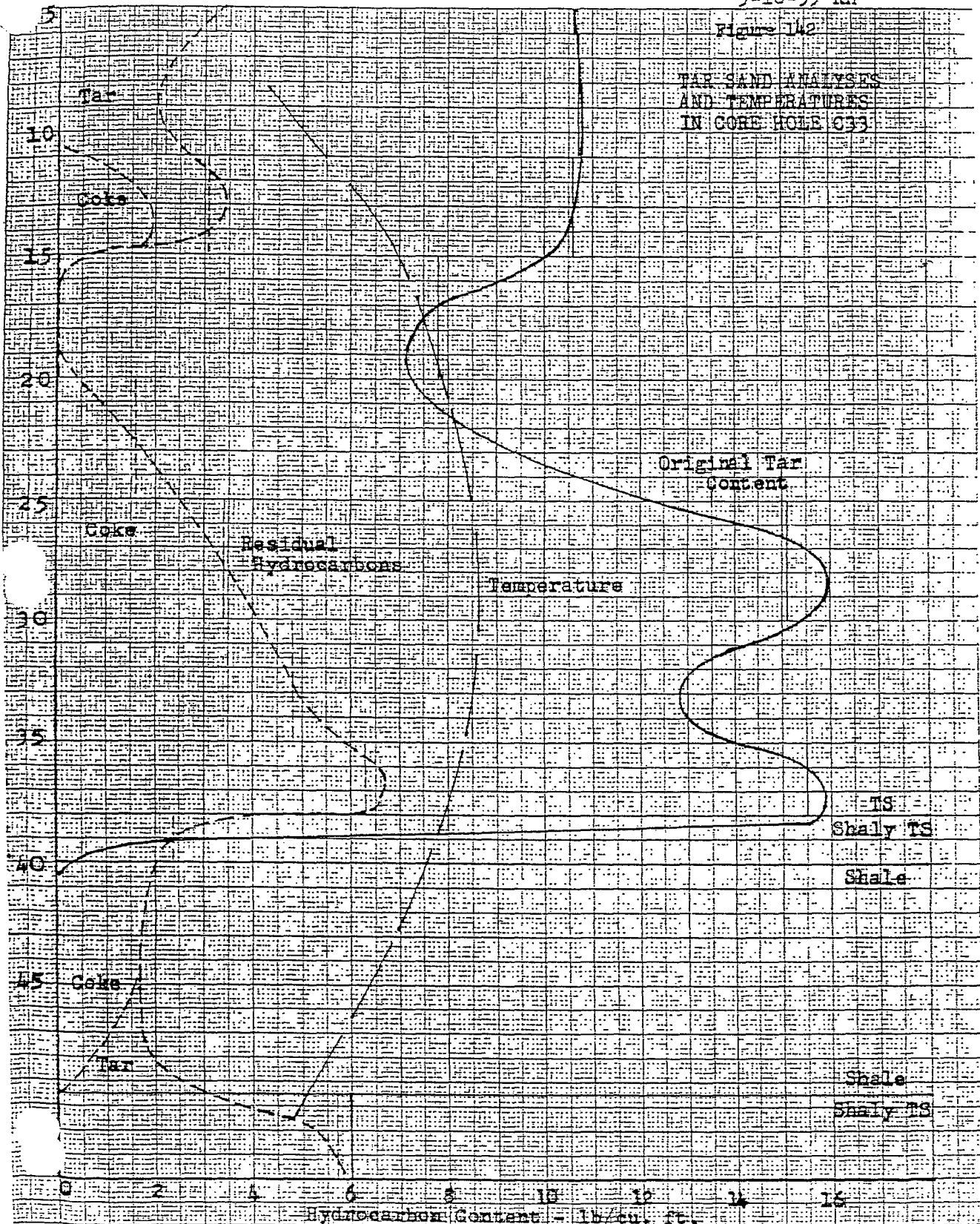


Figure 143

L9-215-34
5-19-59 RH

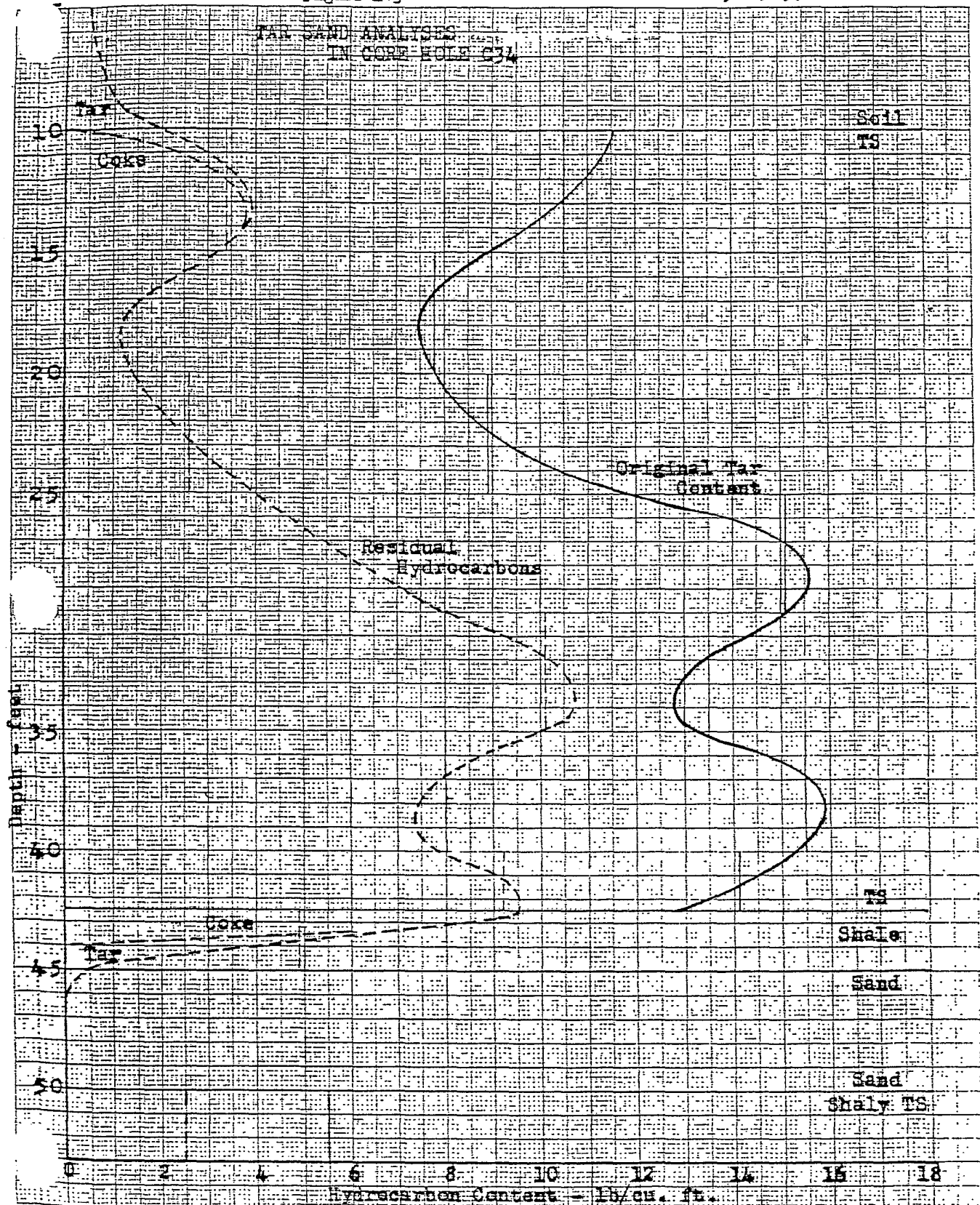


Figure 144

19-215-35
5-27-59 RH

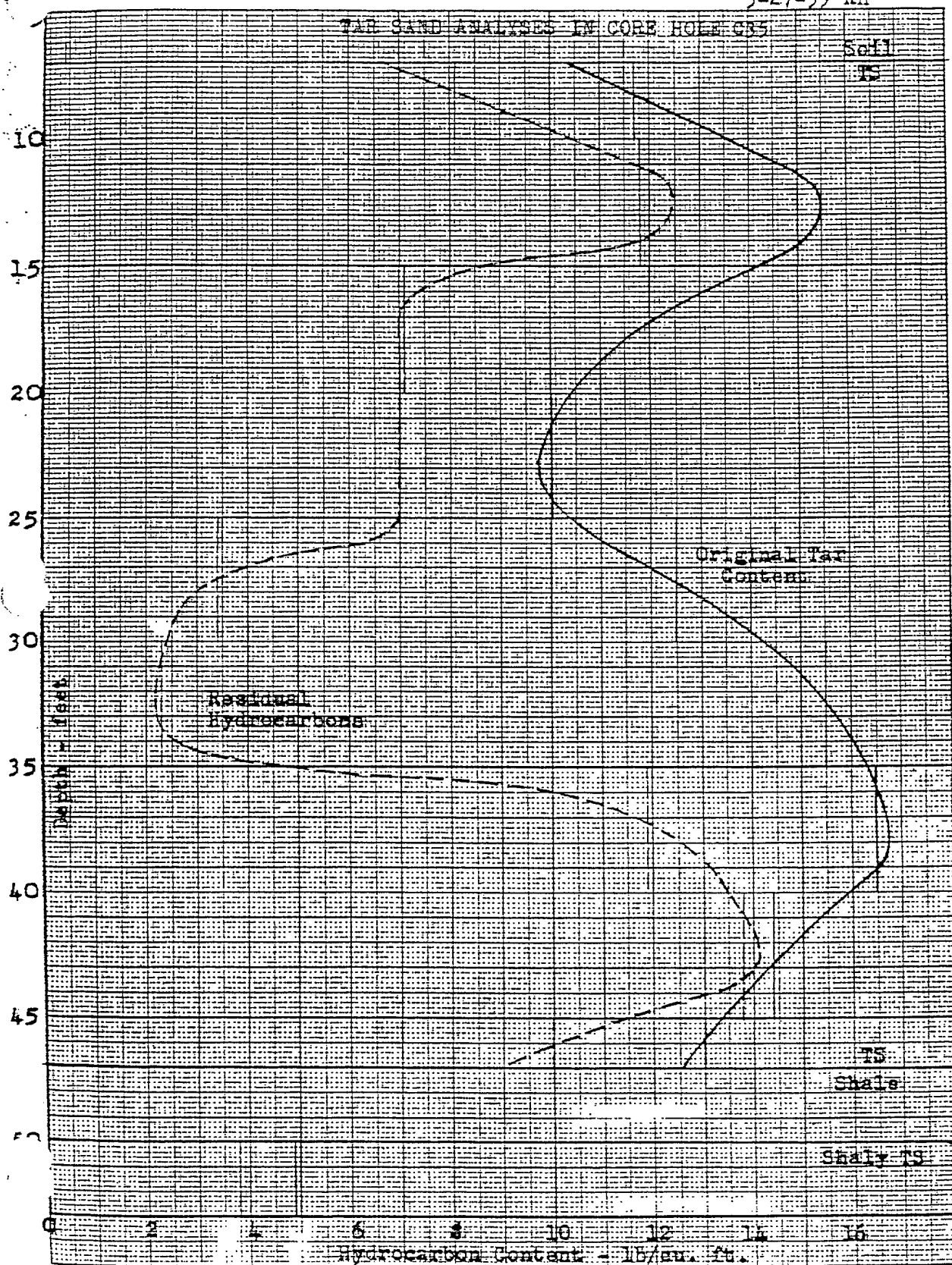


Figure 145

L9-216-1
5-18-59 RH

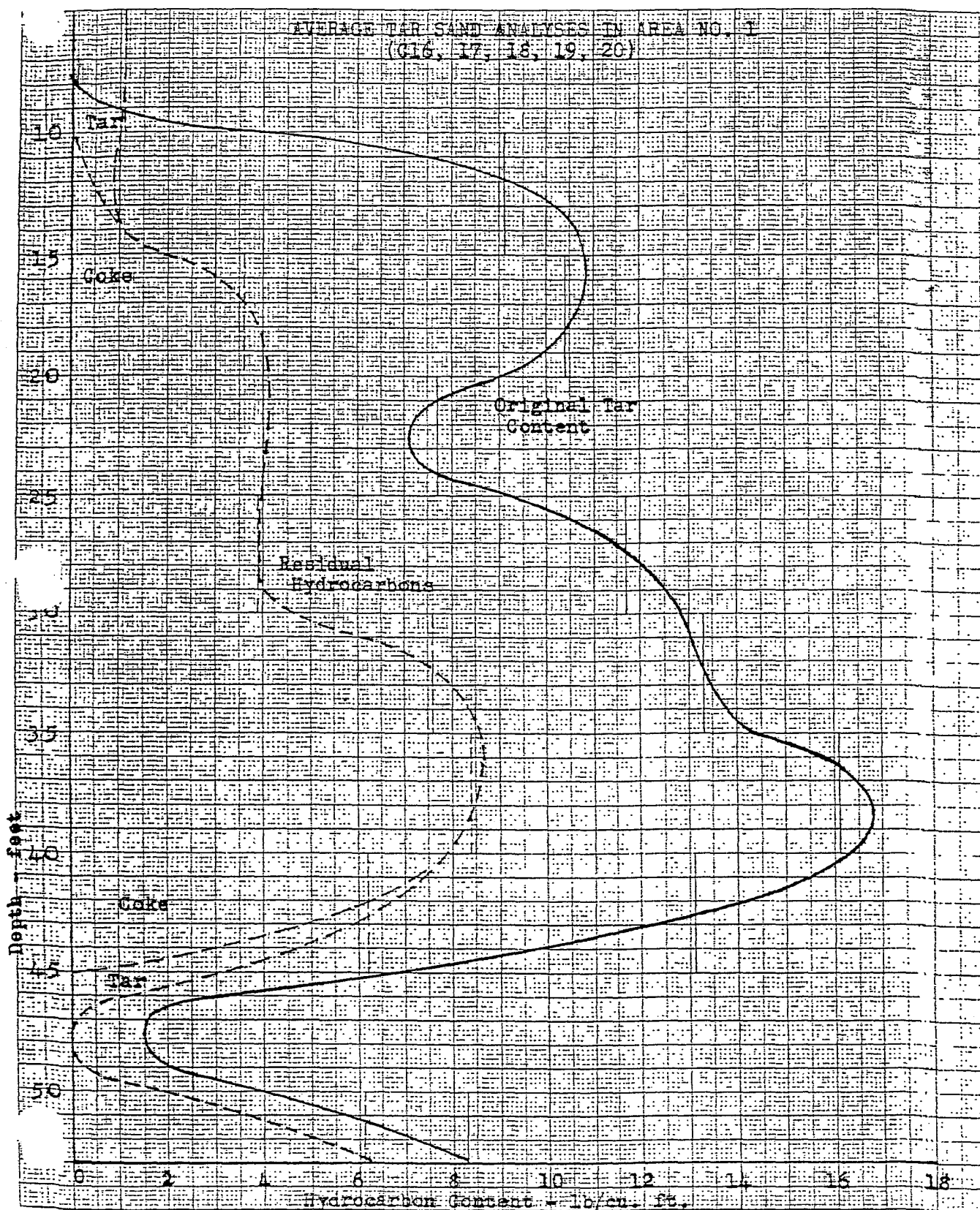


Figure 146

L9-216-2
5-18-59 RH

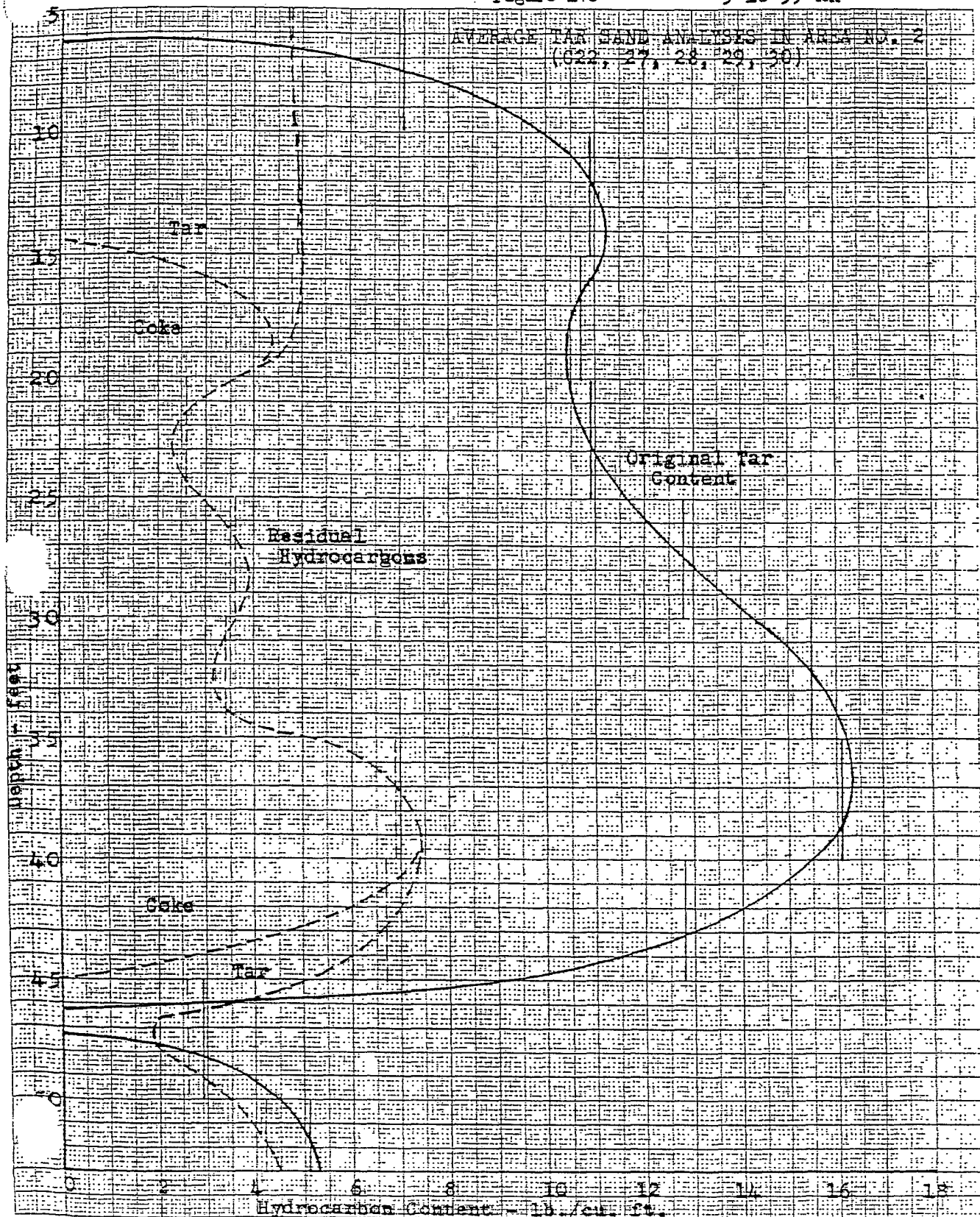


Figure 147

L9-216-3
5-18-59 RH

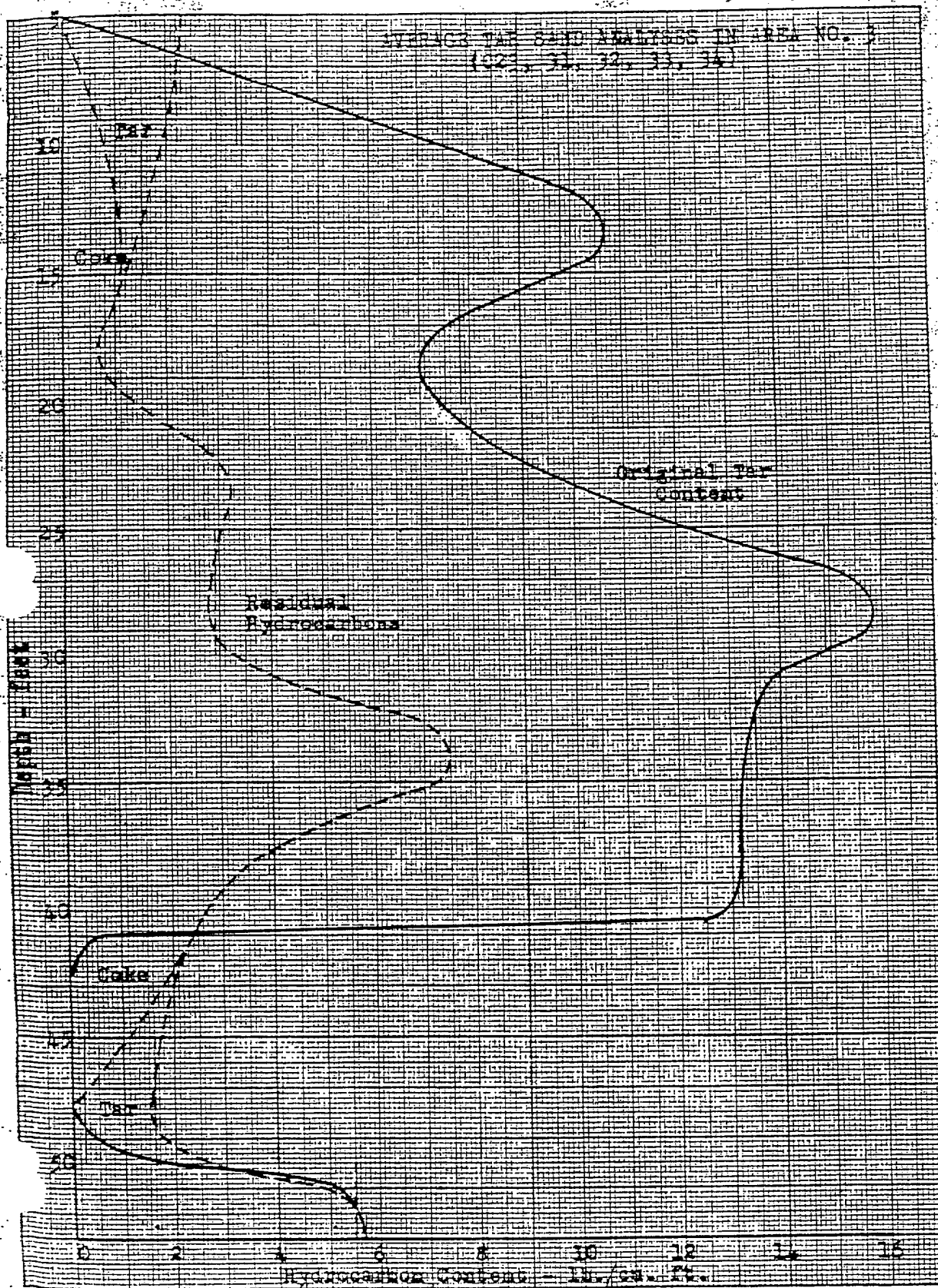


Figure 148

L9-703
5-14-59 RH

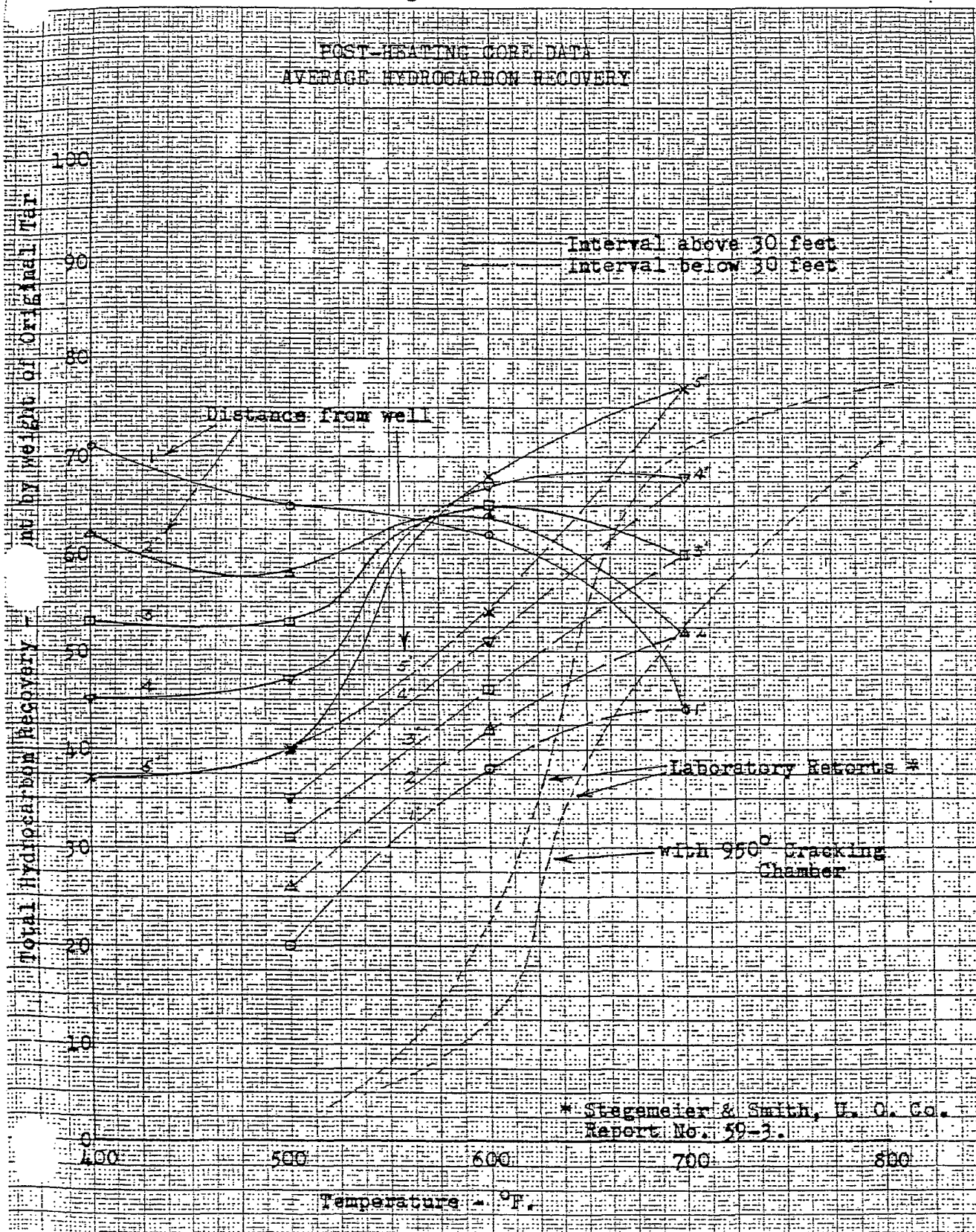


Figure 149

L9-704
5-14-59 RM

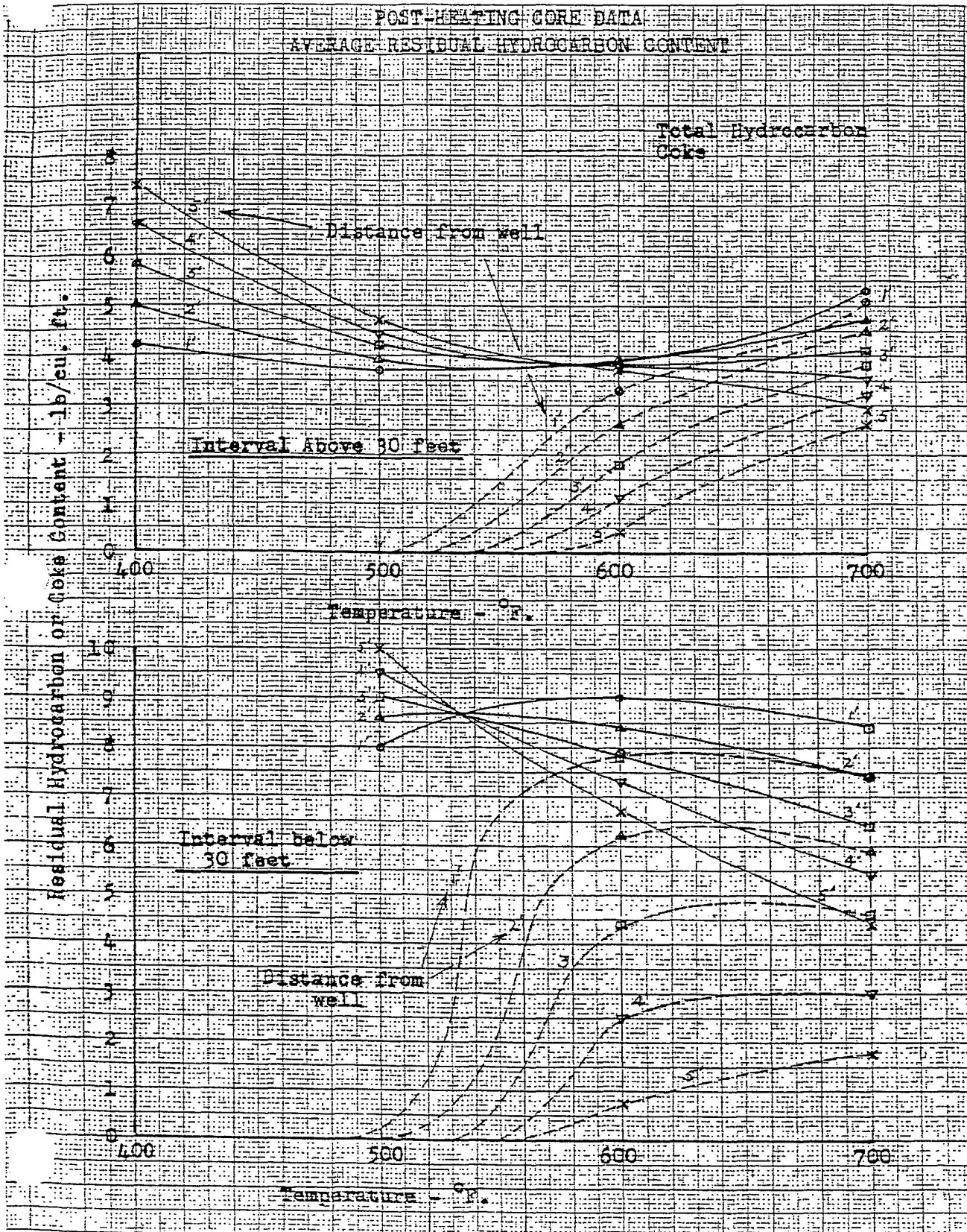


Figure 150

L9-707

5-15-59 RH

SEPARATE GAS WELL TEST IN B8-3

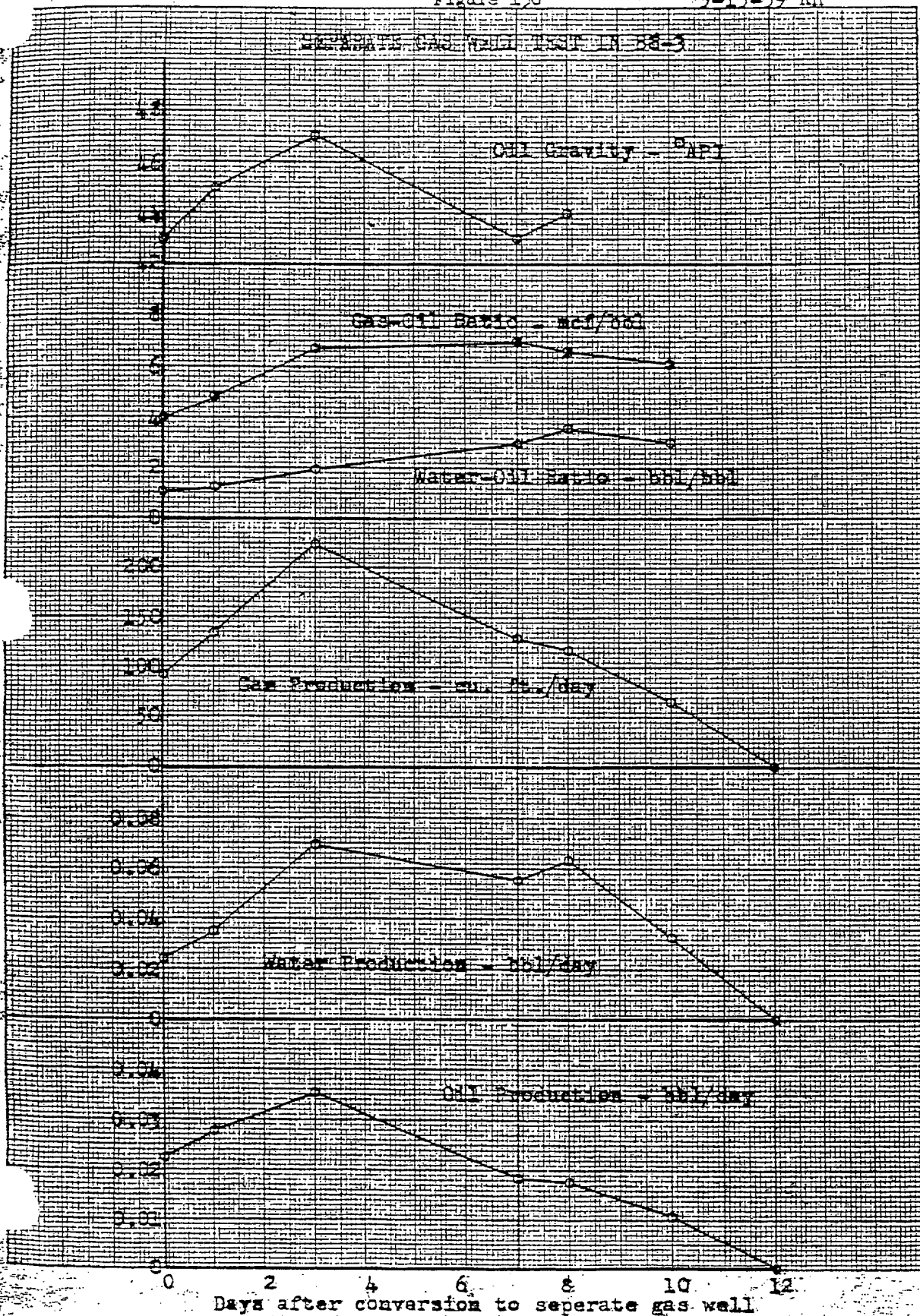


Figure 151

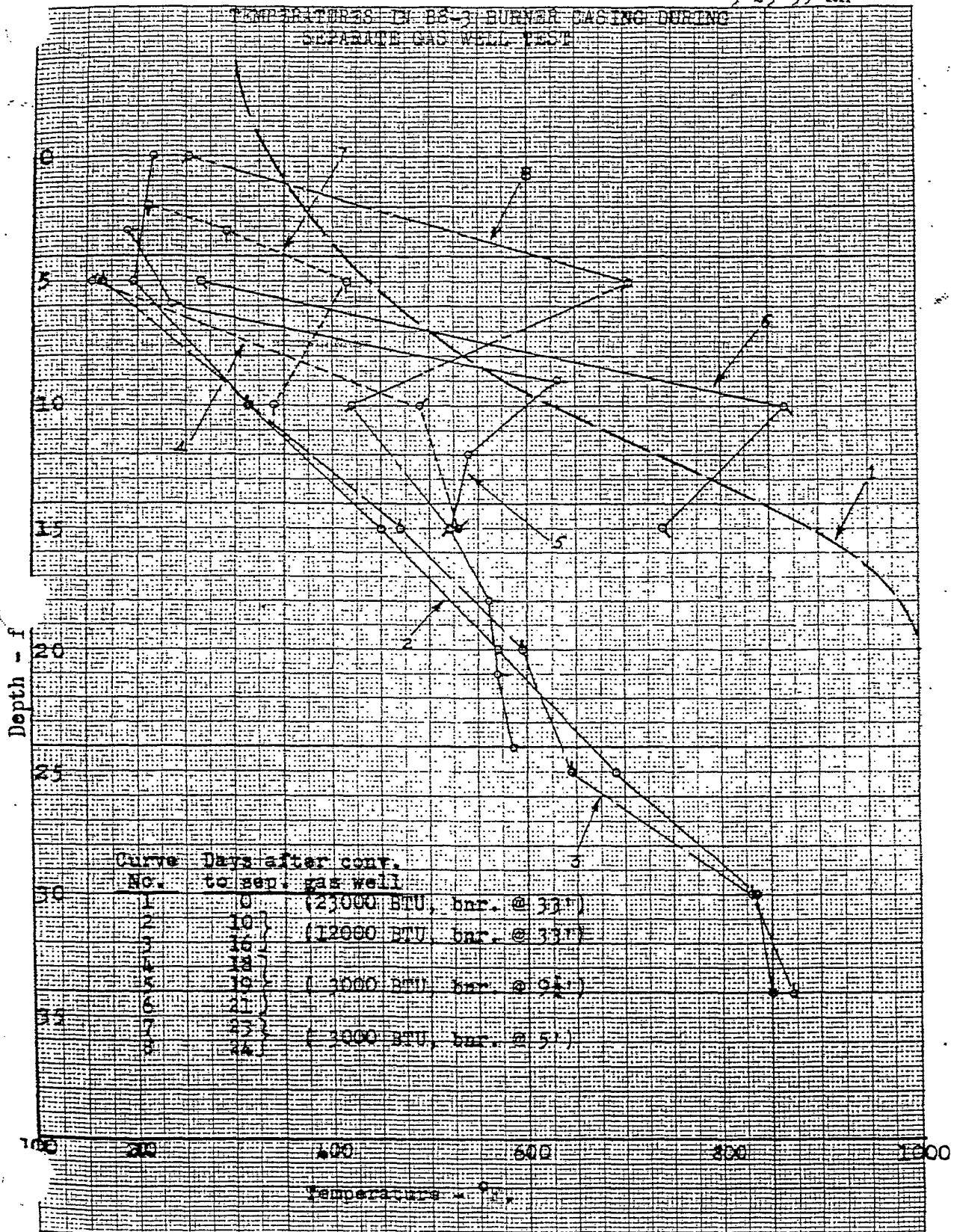
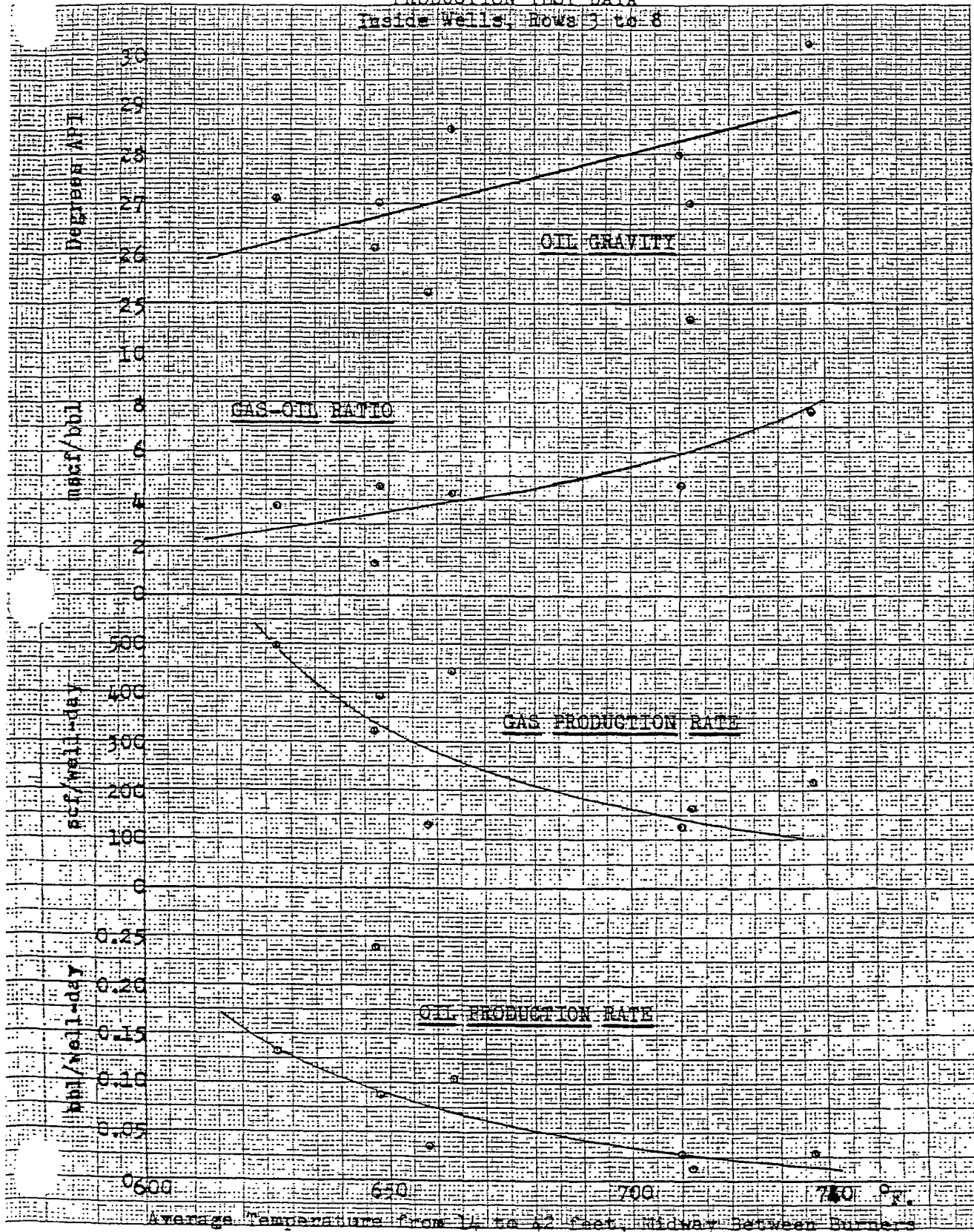
L9-443
5-25-59 RHTEMPERATURES IN BS-3 BURNER CASING DURING
SEPARATE GAS WELL TEST

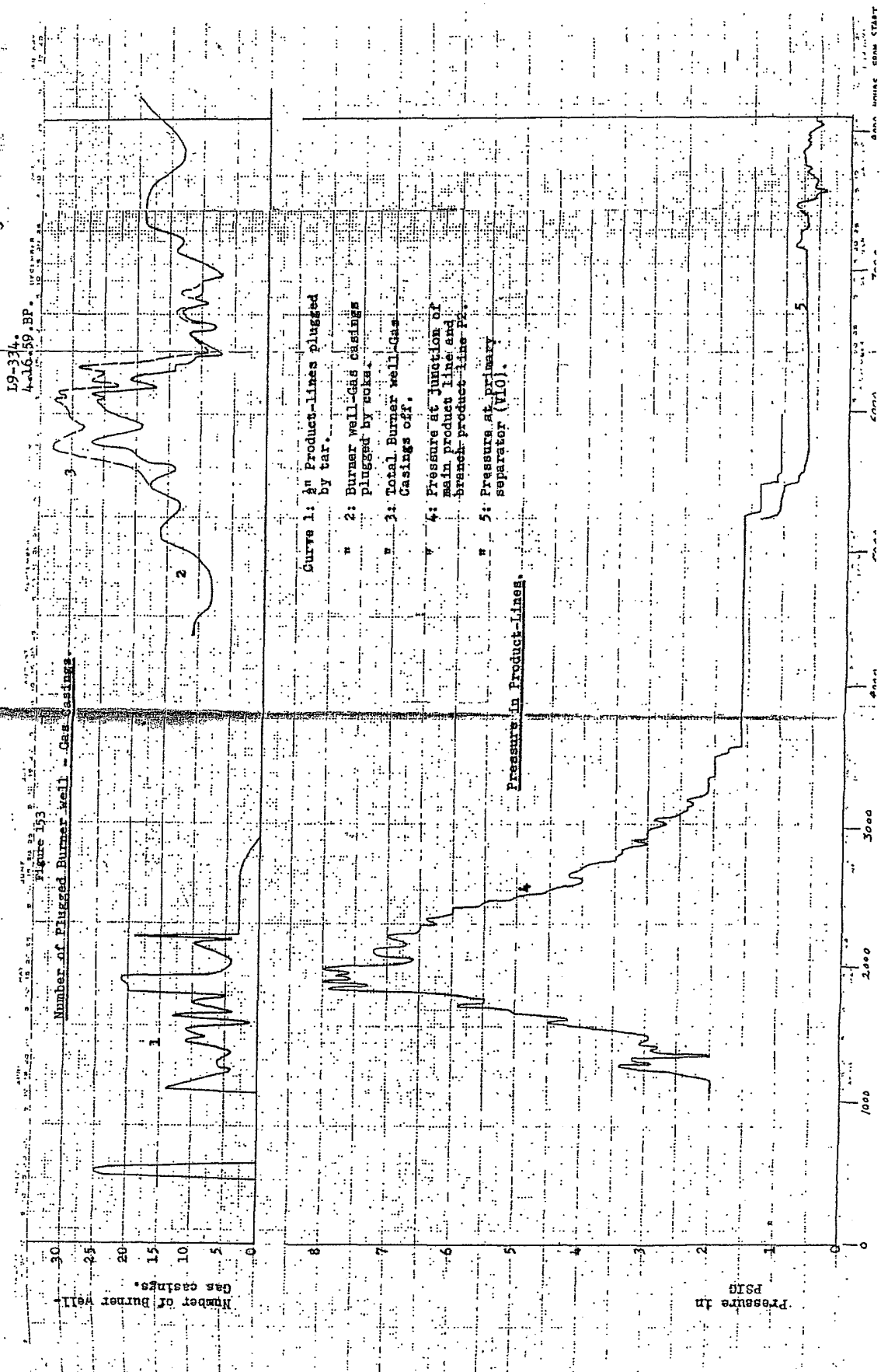
Figure 152

L9-706
5-14-59 RH

PRODUCTION TEST DATA

Inside Wells, Rows 3 to 8





| |
|--------------------|
| L9-101.. |
| JAN.21.1958.8P |
| REVISED 3.15.58.AP |

- BURNER. 15' 5 5/8" AND 40' 4 3/4" HOLE. 52' 2 1/2" CASING.
 ◎ CONCENTRIC GASWELL AROUND BURNER. 13' 4 50"-4 22" CASING.
 ○ SEPARATE GASWELL IN BURNERHOLE. 15' 1 1/2" CASING.
 ⊕ " " 2' FROM ADJACENT BURNER. 20' 3 3/4" HOLE. 15' 1 1/2" CASING.
 ⊖ " " 5'9" " " " " " " " " " "
 ⊗ " " 2' " " " " " " " " " "
 ⊙ " " 5'9" " " " " " " " " " " FILL WITH GRAVEL TO 15' 15' 1 1/2" CASING.
 ● CONCENTRIC GASWELL AROUND WATER WELL. 15' 4 50"-4 22" CASING.
 ○ WATER WELL 5'9" FROM ADJ. BURNER. 55' 5 5/8" HOLE. 50' 1 1/2" TUBING. WSG: 75' 5 5/8" HOLE. 40' 3 1/2" AND 10' 4" TUBING.
 TEMPERATURE WELL 5'9" FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.
 ○ " " IN BURNERHOLE. 52' 1" CASING.
 ● " " 3' (T49B 4') FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.

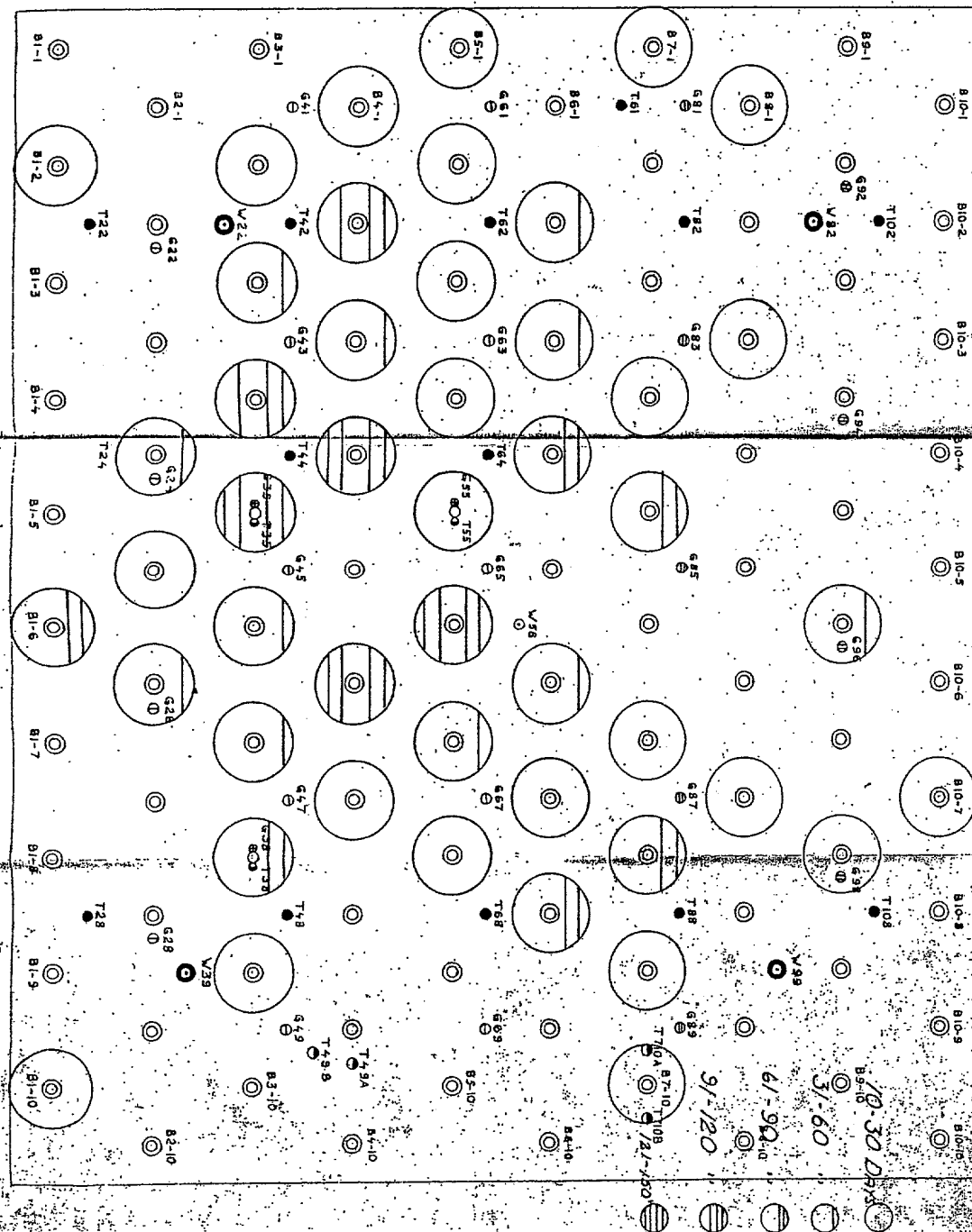


Figure 2.54

PLUGGED GAS CASINGS

4.16.59 B.P.

| |
|---------------------|
| L9-101 |
| JAN. 21 1958. SP |
| REVISED 3.15.58. SP |

- BURNER. 15' 5⁵/₈" AND 40' 4³/₄" HOLE. 52' 2¹/₂" CASING.
 ◎ CONCENTRIC GASWELL AROUND BURNER. 13' 4³⁰/₆₄"-4²²/₆₄" CASING.
 ● SEPARATE GASWELL IN BURNERHOLE. 15' 1¹/₂" CASING.
 ○ " " 2' FROM ADJACENT BURNER. 20' 3³/₄" HOLE. 15' 1¹/₂" CASING.
 ⊕ " " 5'9" " " " "
 ⊖ " " 2' " " 50' 3³/₄" HOLE FILLED WITH GRAVEL TO 15' 15' 1¹/₂" CASING.
 ⊗ " " 5'9" " " " "
 ◎ CONCENTRIC GASWELL AROUND WATER WELL. 15' 4³⁰/₆₄"-4²²/₆₄" CASING.
 ○ WATER WELL, 5'9" FROM ADJ. BURNER. 55' 5⁵/₈" HOLE. 50' 1¹/₂" TUBING W56: 75' 5⁵/₈" HOLE. 40' 3¹/₂" AND 10' 4" TUBING.
 ● TEMPERATURE WELL, 5'9" FROM ADJACENT BURNER. 55' 3³/₄" HOLE. 52' 2" CASING:
 ○ " " IN BURNERHOLE. 52' 1" CASING.
 ● " " 3'(T49B 4')FROM ADJACENT BURNER. 55' 3³/₄" HOLE. 52' 2" CASING.

